COMPUTER HORIZONS

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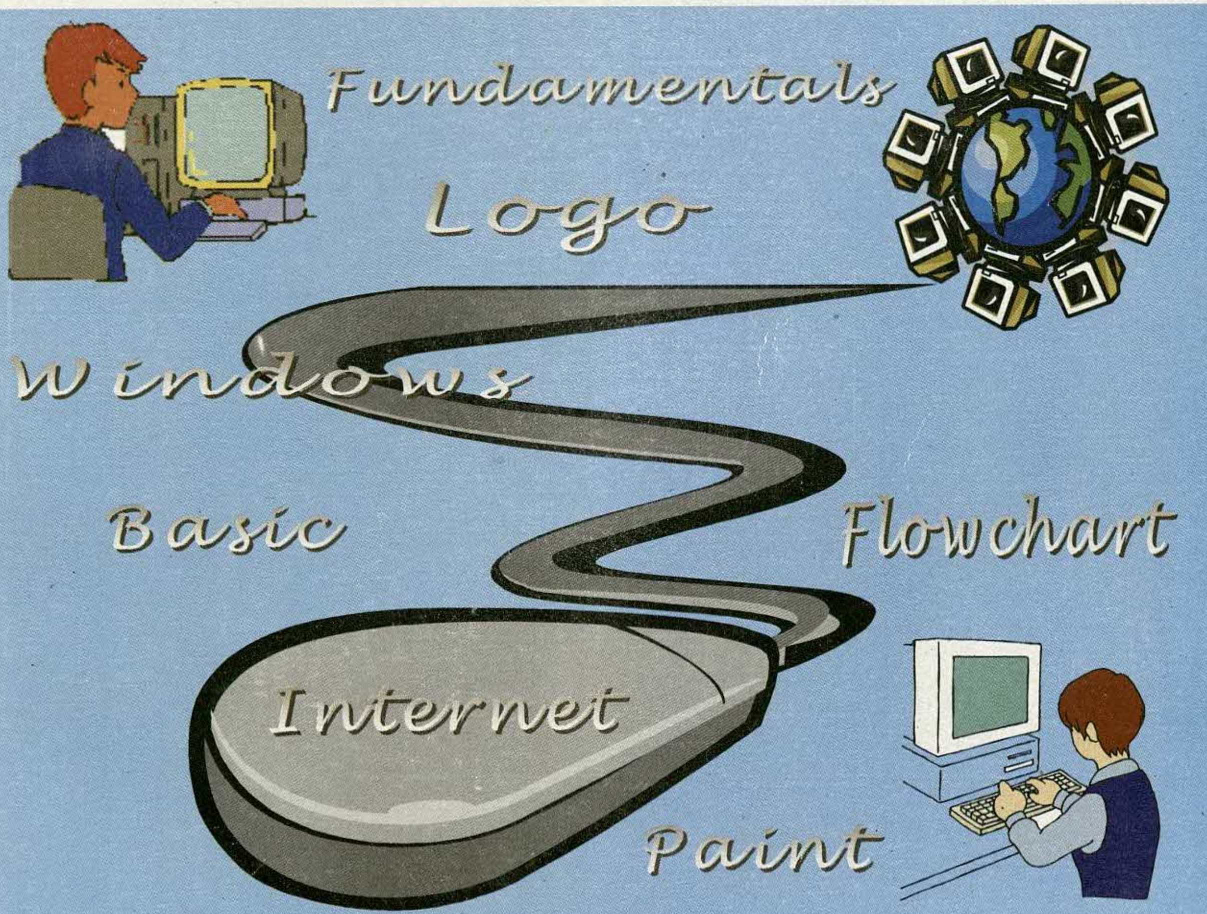
Book 4



S. Addy

ACES Infotech Pvt. Ltd.

24 / Gift

Computer Horizons

Book-4

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PREFACE

The subject of computers is approached with feeling of excitement, awe, fascination and intimidation. In business, Industry and scientific research the computer is an essential tool, and as time goes by, they have an increassingly familiar place in everybody's lives ; at home, in school and at work.

This book deals in a straight forward way with Computer Fundamentals, Input and Output device, Hardware and Software, Windows Operating System, Paint application, LOGO, Calculations through LOGO, Flowchart, Basic programming. It also includes an introductory knowledge on Internet.
Although, this book is meant for pupils for class IV, as a follow up of the text written for junior classes, it could also be treated as an independent text, and general readers will also find it useful.

Happy Computing !

Subhashish Addy

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CHAPTER 1

Peeping into the world of computers

We will learn about

- What is a computer ?
- Different places where computers are being used.
- Development of computers.
- Data and Information.
- The three steps involved in the working of a computer.
- How does the computer work ?

A Personal Computer (PC)

1.1 What is a computer ?

A Computer is an electronic device that has the following characteristics :

- It can receive data that we feed into it.
- It can process the data at a very high speed according to our instructions.
- It can display the processed data as per our requirement.
- It can store vast amount of data inside it.

1.2 Let us find out the different places where computers are being used :

☺ **Computers in air travel:** Airlines use computer to control almost every aspect of their operations.

☺ **Computers in space travel:** Space exploration would be totally unthinkable without computers.

☺ **Computers in office:** Today Computers are doing almost all the official works including accounting, administration and management information system.

☺ **Computers in banking:** Every working day banks handle a large number of information. This information is now being managed with the help of computers. Activities of banks are highly dependent upon computerization. Even if you deposit your money in your bank at Delhi ; with the help of computer transaction you can withdraw it from a bank at Mumbai.

☺ **Robotics:** Computer controlled robots are playing an important part in modern industries. They are doing the tasks which are laborious, tedious and dangerous for human beings.

☺ **Computers in medicine:** Computers are being used within the field of medicine also. They are used for storing records of patients, to control medical equipments etc.

☺ **Computers in School:** Computers are being used in the field of education to help the children to learn every subject and help the teachers to teach. Learning has become very easy through the help of multimedia.

☺ **Computer Graphics :** Computer graphics means the ability of the computer to draw pictures on the screen. Computer graphics are used to make cartoons in the film industry, to make educational and games softwares etc.

☺ **Computer Aided Design :** Aerospace, motor manufacture and electronic industries are using Computers Aided Design (CAD) to develop new products, to draw new designs etc.

☺ **Computers at home :** Today computers are being used at home also. We use them for home accounting and entertainment device. With the help of facilities you can deal with banks, institution and even book ticket in cinema halls.

1.3 Development of computers

Throughout history man has constantly looked for ways of making calculations easier.

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In the ancient world the ABACUS (counting frame) was commonly used. In 1642,a Frenchman called **Blaise Pascal** invented the first mechanical calculator.In 1821, **Charles Babbage** (An English Mathematician) began to build the **Difference Engine** to calculate mathematical tables. As the accurate parts of this Engine could not be made, Babbage could not finish his project. Then he started working on a machine what he called an Analytical Engine. Unfortunately this was also never completed . But his ideas are important because he had designed the **first automatic computer**. Charles Babbage is thus referred as the **" Father of computers".**

The next major advancement was made by Herman Hollerith (An American Statistician) who invented a fast counting machine named **Tabulating machine.**

In the 1940s work began on the first electronic computer. In 1941 a group of engineers(along with Howard Aiken of Harvard University) of IBM made a large electro-mechanical computer named Harvard Mark I. In 1946 **ENIAC** (Electronic Numerical Integrator And Calculator) was built at the University of Pennsylvania. ENIAC could do 5,000 calculations in a second, but could not store Information or instructions. The Manchester University Mark l (first ran in 1948) is considered to be one of the true computers because it could store information and instructions. In 1949, the first **E**lectronic **D**elay **S**torage **A**utomatic **C**alculator **(EDSAC)** was made. In this way the modern computer came into being.

1.4 Data and Information

The Word "Data" is derived from the word "Datum" which means facts. The word "Data" is the plural of the word "Datum". Data can be considered as the raw material for preparing an "Information".

Let us take some examples of data to understand this concept 4,4,4,03324758010,03324799822, 03324795496, Shakti, Jaysurya, Kajol, 1,2,3. The data given above does not make any sense. Only if someone or a computer can arrange the above data in a proper manner we shall be able to understand what this data implies.

If we enter the above data into a computer we shall receive from it the following information after necessary processing.

Sl. No.	**Name**	**Class**	**Telephone No.**
1.	Shakti	4	03324758010
2.	Jaysurya	4	03324799822
3.	Kajol	4	03324795496

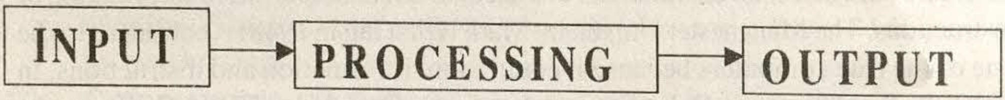
We have just seen how neatly the jumbled up data has been arranged and we now have realized what it means. This is called meaningful information. When we feed in data as input it might contain jumbled up data which may not be meaningful. The Computer arranges this data in a proper manner. Thereafter only meaningful information forms the output from the computer.

Information may be defined as a collection of data in an organized manner.

1.5 Let us learn the three steps involved in the working of a computer

There are three basic steps in the working of a computer which are as follows :

1. **INPUT**
2. **PROCESSING**
3. **OUTPUT**



What do we understand by the term " Input" ?

Input implies the raw data and the instructions, which is fed into the computer for processing. We can input data inside the computer through input devices such as Keyboard, Mouse etc.

Thus "Input" includes two main elements :

i. The data that we feed into the computer.

ii. The instructions in the form of software programs, which is required for processing the data.

What do we understand by the term " Processing" ?

The computer analyses and processes the data fed into it as per our requirement in its Central Processing unit and transforms them into useful information. The various process of logical and mathematical operations are done during processing.

What do you mean by the term " Output" ?

The processed data (information), which we get from the computer after processing the input, is known as the "Output". The output is available to us, on a Monitor or a printing device.

Let us take an example. Say we want to add two numbers 5 and 10. The three steps you have learnt are:

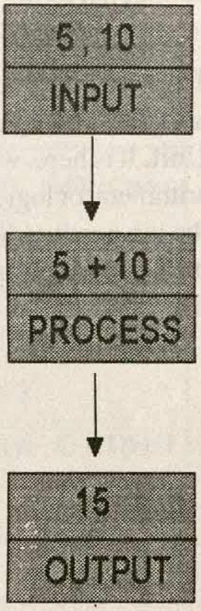
Step 1: INPUT: You have to feed in the computer the given data i.e. the numbers 5 and 10.

Next you have to give the computer certain instructions to do the said job.

These instructions tell the computer what to do with these numbers: say **Add them**. You will later come to know that these instructions are called programs. The data and the instructions together form the **input** to the computer.

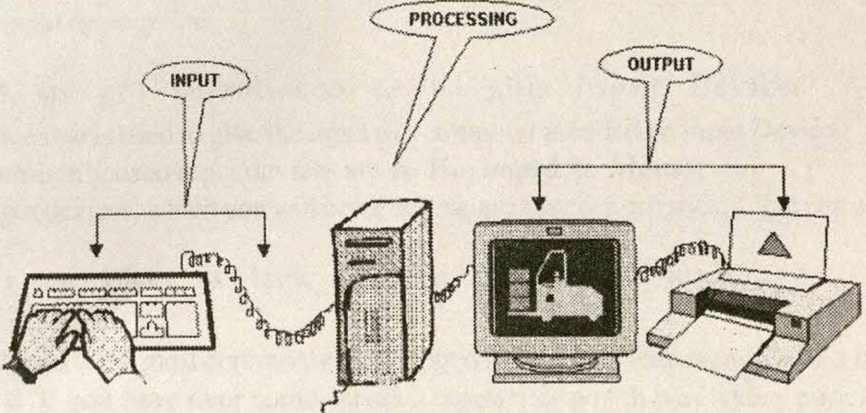
Step 2: PROCESS: The computer works on the data as per the instruction in its CPU. The actual process of addition of numbers is done inside the CPU.

Step 3: OUTPUT: The result of the addition i.e.15 is the output. It is displayed on the monitor and can also be printed on a paper.



The **data (Input)** given to the computer is available to the user after processing in the form of **information (Output)**.

A computer is an electronic device, which converts data into meaningful information.



1.6 How does the computer work

We know that the keyboard is the main input device of the computer, which is connected to the CPU. The data that we type through the keyboard travels to the memory of the CPU. The memory stores this data during the processing.

The data then goes to the Control Unit of the CPU. If the information requires any arithmetic or logical operations, the Control Unit sends it to the **Arithmetic & Logic Unit.** It is here, where the actual computation is done. If the job is not related to the arithmetic or logical function, the information is sent back to the memory. Even when the job needs to be processed in the Arithmetic Logic Unit (ALU) it has to be sent back to the memory, which is first stored in the memory and is sent to output devices like video display unit in the form of information.

Chapter 2

Input and Output Device

We will learn about

- ☺ Getting introduced to various input devices.
- ☺ The computer keyboard.
- ☺ Getting friendly with the computer mouse.
- ☺ What do we do with Joystick?
- ☺ What is the function of a scanner ?
- ☺ Getting introduced to various Output Devices.
- ☺ Monitor, Printer, Speaker, Modem.

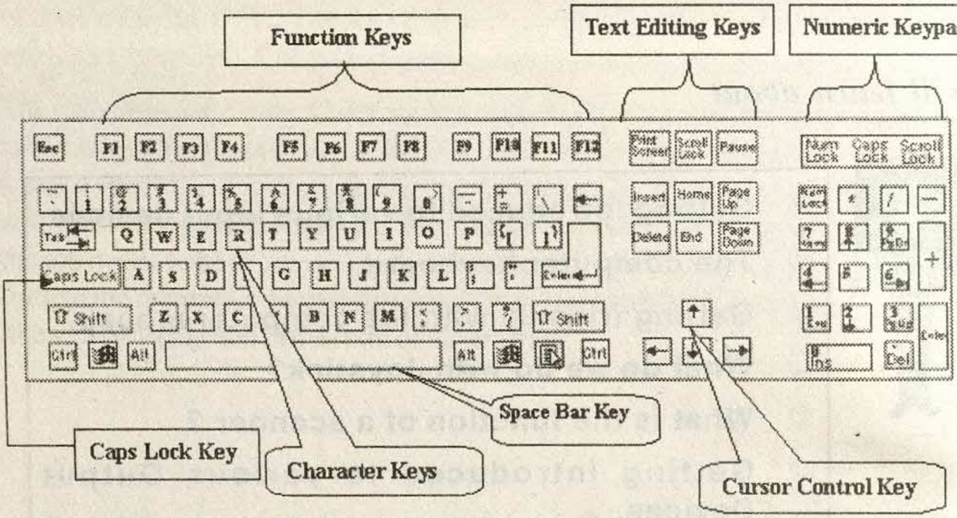
In this chapter we will discuss about **input** and **output** devices. Let us get familiar with the input devices first.

2.1 Let us get introduced to various Input Devices

The device that is used to give the input to a computer is called an Input Device. Most commonly used input devices are **a. Keyboard b**. **Mouse.**
Other input devices, which you will come across, are Scanner, Joystick, Light pen etc

2.2 Let us have a look at the Computer Keyboard

The keyboard is the most commonly used input device. There are several keys on the keyboard .If you have ever come across a typewriter which was a very popular typing instrument some years ago you will find a great resemblance in its keys with that of a computer keyboard. Besides typing texts and numeric data, by pressing specific keys or combination of keys the user can carry out different commands and functions through the help of a keyboard.



The number of keys available with a keyboard varies between 101,105,121 or more depending on whether it is a multimedia ready keyboard or an Internet ready keyboard and so on.

What about knowing the activities of some of the important keys ?

Alphabet keys

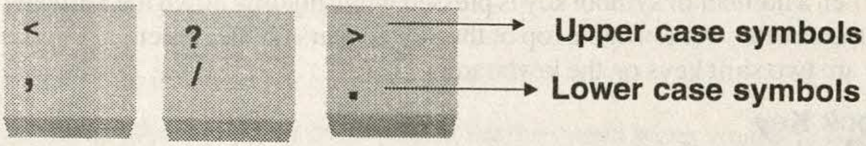
These keys are used to enter the letters of the alphabet from **A** to **Z**. When you press a letter key, the letter written on the key appears on the screen in lower case. Capital letters will appear only when you press the letter key along with the **shift** key. The alphabetic keys are arranged on the keyboard in the same order as they are arranged on a typewriter.

Number Keys 0 to 9

When you press a number, the number written on the key appears on the screen.

Symbol keys :

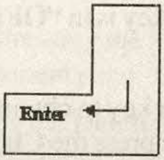
Special symbols such as punctuation marks, and various characters are often marked on some keys. If we press any key having two symbols, normally the lower symbol is printed on the screen. To print the upper symbol, we have to hold the shift key down and then press the symbol key. Let us see some examples of symbol keys below.



Space bar key :

This is the longest key located at the bottom of the keyboard. Every time you press this bar the cursor moves one space to the right of the computer screen. It is used to leave space between characters, words, numbers, symbols etc while typing.

Enter key



The Enter key is used to tell the computer to carry out the instructions typed on the screen. This key is also known as the RETURN key. There are two "Enter" keys on the keyboard. Sometimes this key is denoted with an arrow key pointing to the left as given in the figure.Pressing the Enter key makes the cursor jump down to the next line along with all the charactors located to its right. Pressing the Enter key when the cursor is at the beginning of a line allows us to skip a line, by keeping one line space above it.

ESC Key :

This key is used to cancel or ignore the command, which has been entered last. It also used to quit from the current work. This key is located at the top left corner of the keyboard.

TAB Key :

If we press this key the cursor jumps from one point to another leaving specific number of spaces along a line. We use tab key to create document in the form of a table.

Shift Key :

The Shift Key has to be used in conjunction with other key. The Shift key individually cannot give any output.

a. When an alphabet key is pressed, while holding down the Shift key, we find the upper case (capital) letters on the screen.

b. When a number or symbol key is pressed while holding down the Shift key , the character written at the top of the key appears on the screen.

There are two shift keys on the keyboard.

Caps Lock Key

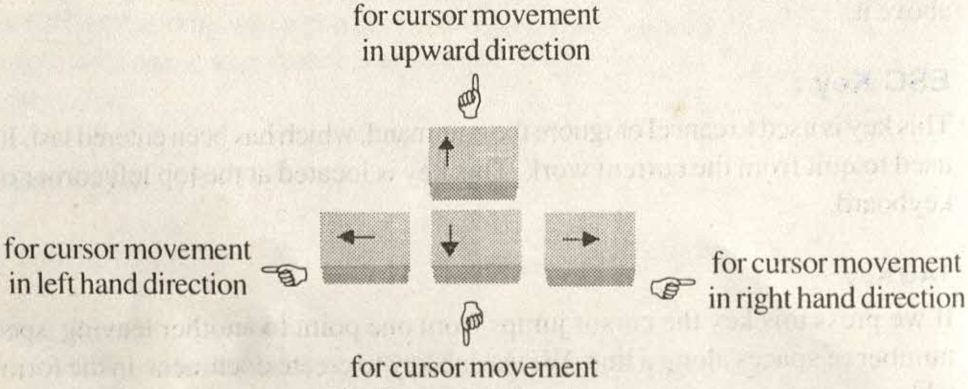
The **Caps Lock** key as the name suggests, is used to print all letters in upper case. Normally the **Caps Lock** key is in **"OFF"** position; so whatever alphabetic keys we press is displayed in lower case.When the user presses the Caps Lock key it turns on a light on the keyboard indicating that the Caps Lock key is **"ON"**. As long as the Caps Lock key is on, all letters typed through keyboard appear on capitals on the screen. To turn Caps Lock key off the user has to press the Caps Lock key again. The indicator light is turned off when the Caps Lock key is in **"OFF"** position.

Control (Ctrl) Key

Control (**Ctrl**) key is always pressed with some other key to obtain a specific result. For example, in any windows operating system if we press the **Ctrl** key and **Esc** key together the **Start** menu is displayed. Again if we press **Ctrl** key and **End** key together the cursor reaches the end of the line. While you learn more on the computer operations you will come to know more on the use of Control (Ctrl) key. You will find two Control keys on your keyboard.

Cursor Control Keys: Up, Down, Left, Right.

These keys are used to move the cursor along the direction of the arrows. These keys are found on the right of the Alphabatic keys and nearer to the bottom of the keyboard.



Text Editing Keys

There are six such keys found in the form of a cluster on a conventional keyboard. These keys are located on the right side of the alphabetic keys. These keys allow us to move around the screen very quickly when we are writing a letter. There are certain functions of each of these keys.

Insert : To insert one or more character.

Home : Takes you to the beginning of the document when you press **Home** key and **Ctrl** key together.

End : Pressing the **End** key and **Ctrl** key together takes you to the end of the document.

Page Up : Pressing the Page Up key along with the Control (Ctrl) key takes you to the previous page.

Page Down : Pressing the Page Down key along with the Control (Ctrl) key takes you to the subsequent page.

Delete: Pressing the **Delete** key erases the letter either on the cursor point or to the right of cursor. In case we select a letter, word, sentence or paragraph by dragging the cursor over it, as soon as we press the **Delete** key the selected area gets erased.

[**Cursor** : The blinking light on the computer screen in the shape of a small vertical line, a horizontal hyphen or a block is known as the cursor.].

Numeric keys :

On the extreme right side of most keyboards there is a set of keys grouped together with numbers from 1 to 9 as the upper characters. When the numeric lock referred as "Num Lock " key remains pressed these keys are used to enter number in a quick and easy way .When the number lock key is not pressed these keys control the movement of the Cursor.

2.3 Getting friendly with the Computer Mouse

A very important device that is used with a computer is a **mouse**. This device is shaped a bit like a real mouse. You will find that the cable that connects it to the computer resembles the tail of a real mouse. If you turn over a computer mouse, you will find a small ball inside it.

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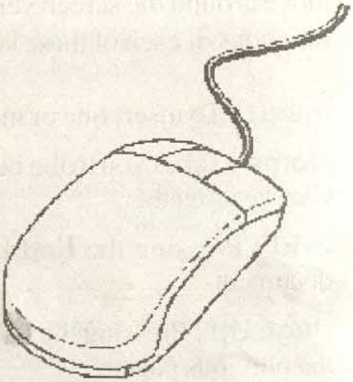
This ball allows us to move the mouse across a plain surface. The mouse is usually moved on a rubber pad called a **mouse pad**. You will notice that as you move the mouse a small arrow moves across the screen. This arrow is called mouse or a pointer.

What all can you do with your computer mouse ?



If you move the mouse with your hand, you can make the pointer move around the computer screen. You can also point to an object with the pointer. Whenever you wish to pick an object you have to point it with the arrow and press the mouse button once; this process is called "**clicking**." [While working on the Paint Application if you want to chose any tool from the tool box you have to click on it to activate it.]

Usually you will notice that a computer mouse has two buttons ; a left button and a right button and the button at the left is used most often.

When you need to open a software application you have to place the mouse pointer on it and quickly push the button two times. This process is known as **"Double Clicking"**.

In case you want to select a text you can drag your mouse along the text while keeping the left button pressed. You will find the text to be highlighted. This process is also known as **"Selection"**.

You can also move an object across the screen with your mouse. This is called **"Dragging"**.

To drag an object across the screen, you have to point at the object, press and hold down the mouse button and move tl mouse.

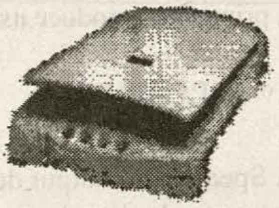
Try this on your desktop. Point to any of the icons and dr it to a different location.

2.4 What do we do with the Joystick

Joystick is a hand held input device that is easy to use and primarially used for playing games on the computer. Simil to a mouse it is also a pointing device and allows the user move on the screen rapidly from the left to right and bac and forth.

Most joysticks have several buttons on them that are used when playing various computer games. Like the computer mouse, the joystick has a long cable that is attached to the computer.

2.5 What does a Scanner do ?

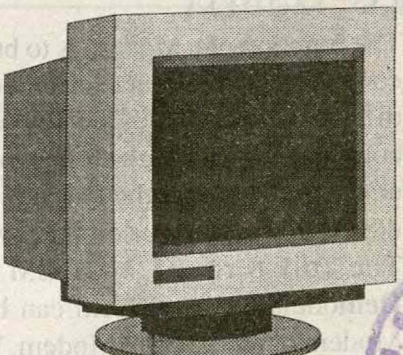


A Scanner is an input device. It may be attached to the computer whenever needed. It is just like a photocopying machine. If we place our photograph , a picture or a page of a story book under the scanner it scans an image or text and sends the copy of that image to the computer. The photograph or the writing then appears on the computer screen which can also be modified, saved and also printed out through the help of a printer.

2.6 Getting to know the various OUTPUT DEVICES

A device on which the output is produced is called an output device.

2.7 Video Display Unit or Monitor

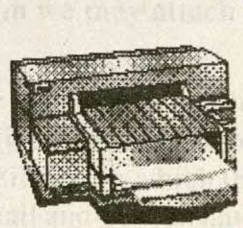


The common output device for the computer is the Video Display Unit which is also known as the monitor. Whatever text is typed on the keyboard appears on the screen of the monitor. A monitor usually is available in different sizes. Like your TV set you can have a monochrome (black & white) monitor or a colour monitor.

A Monitor resembles a TV screen and displays the output in the form of information. The output from the monitor is known as **"Softcopy"**. A monitor comes in various sizes viz. 14", 15", 17", 19", 21" etc. The output is available on the monitor as long as the computer or the monitor are not switched off.

Library

2.8 PRINTER



Apart from monitor, a printer is a very important output device. A printer may be used when we want the computer output in a printed format.

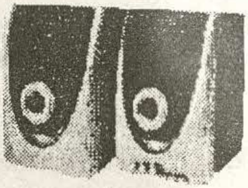
The printed output from a printer is called a **hard copy** since we can touch it and keep it for future reference.

The three popular printers, which are commonly used in homes and offices are :

1. Dot–Matrix Printer
2. Inkjet/DeskJet Printer
3. Laser Printer.

A printer can produce its output in black or color.

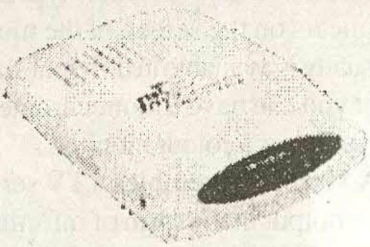
2.9 SPEAKER



A Speaker, an output device, is just like the mouth of the computer. It gives the result in the form of sound, which one can hear.

Since a speaker is not an essential part of a computer but may be attached to produce sound whenever required it may be termed as a peripheral of a computer. We can hear musical CDs through the speakers attached with the computer.

2.10 MODEM



The function of a Modem is to build connection between one computer to other computers; just like our telephone can connect us to different telephones of the world. Modem communicates through the help of a phone line. It connects the user to the Internet. It is an essential device to connect the computer with the Internet. The full form of MODEM is **Mo**dulator **Dem**odulator. A modem can be both Internal Modem or an External Modem. What type of Modem is attached to your school computer ?

Chapter 3

Getting acquainted with Hardware and Software

We will learn about

- ☺ **Introduction**
- ☺ **Central Processing Unit**
- ☺ **Control Unit**
- ☺ **Arithmetic Logic Unit**
- ☺ **Memory Unit**
- ☺ **Familiarizing with the storage device**
- ☺ **Differrentiating between Hardware and Software**
- ☺ **System Software and Application Software**
- ☺ **Computre and the Internet**

3.1 Introduction

The computer which we use in schools, at home, in Railway Reservation, Offices are all known as Personal Computer in short ' PC'. Today we find a personal computer or a PC to be used by most of the people around the world. It has three main parts as given .

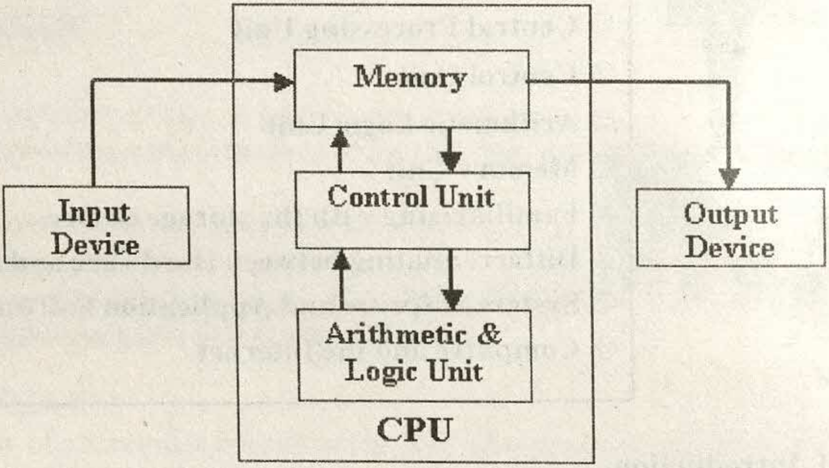
1. Central Processing Unit or the CPU.
2. Monitor or Video Display Unit
3. Keyboard

We enter data through the keyboard. The processing is done by the CPU and the monitor displays the input data as well as the results of processing. In case we want the processed output in a printed form we may attach a Printer.

The CPU is made up of the micro processor chip and the memory chip. The computing job is performed by the CPU and the storing job is performed by the memory. These chips are made up of tiny wafers of silicon on which the circuits are built. A chip can be as small as your finger nail and yet can have huge storing and computing ability.

3.2 Central Processing Unit

The Central Processing unit or C.P.U. is the most important part of a computer. C.P.U is the pathway between the input and output devices. Just the way we put water in the freezer, to get back ice after necessary processing in the refrigerator; similarly all data (input) has to be processed in the CPU, before displaying the output.



Several components of the Central Processing Unit work together to collect, identify and store information.

These components can be divided into three units :

(i) **Control Unit (CU)**
(ii) **Arithmetic and logic Unit (ALU)**
(iii) **Memory Unit (MU).**

3.3 Control Unit :

This unit controls and directs all the functions of the computer.

3.4 Arithmetic and Logic Unit :

All the calculations and logical actions take place inside the Arithmetic and Logic unit.

3.5 Memory Unit :

- We remember faces, names, telephone numbers of our several friends ,
- We remember scores of cricket matches of various countries and our players.
- We remember birthdays of all our friends at our fingertips.

How do we remember things ?

We remember because we have a memory.

The memory unit of the Central Processing Unit forms the temporary storage of all data, information and instructions during the working of a computer.

As soon as we put data into the computer, it is sent to the memory. This memory is also called the Internal

Memory or Primary Memory.

It is called internal memory since it is placed inside the computer. It is called Primary Memory since this is

the storage area or work area where the data is first placed before any processing takes place.

This Primary or Internal Memory is of two types:

1.ROM or Read Only Memory

2.RAM or Random Access Memory

ROM is known as Read Only Memory because you can only read from this chip and cannot write to it. Writing to a chip means storing data on the chip. ROM is used by manufactures of computers to permanently store programs required for starting a computer.

RAM or Random Access Memory is used both to read and store data. In this type of memory chip you can read from it as well as write to it. This is a temporary memory; as soon as we switch off the computer everything stored on RAM is wiped out. Since all data is wiped out when the computer is switched off or power goes off RAM is also referred to as **Volatile Memory**.

The more the amount of RAM available in a computer the faster computer will work.

We already know that data in a computer is stored in bits. A set of 8 bits makes a byte.

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3.6 Measurement of Memory

1 Character = 8 Bits (Binary Digits)
4 Bits = One Nibble
8 Bits = One Byte
1024 Bytes = One Kilobyte (KB)
1024 KB = One Mega Byte (MB)
1024 MB = One Giga Byte (GB)

3.7 Measurement of Processing Speed

Speed of a computer is measured in Hertz, like Megahertz, Gigahertz.

1000 Hz = 1 KHz
1000 KHz = 1 MHz
1000 MHz = 1 GHz

A Computer's speed is decided based on the amount of time it takes to process the instructions.

The speed of the present day computers vary from 133 MHz to 2.2 GHz or more. In the future it might reach unbelievable speed.

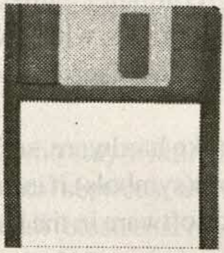
In the initial years, computers in schools were having a memory of around 256 KB RAM whereas now there are computers in schools having 256 MB RAM.So you can imagine the development of computers over the years.

3.8 Familiarizing with the Storage Devices of the Computer

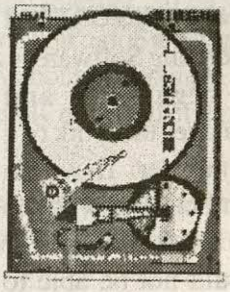
As you grow up you will notice that it is not possible for your memory (brain) to store infinite data. In such cases we start noting down data. That is precisely the reason we keep an address book of our friends, telephone directory of our acquaintances etc. These act as storage places for the different data we want to store. Whenever we want to find the address of any friend of ours; instead of taxing our brain we refer to our address books. The same applies for a computer system where storage devices are required to store large amount of data.

Secondary storage device : The Secondary storage devices are used to store data permanently even when the computer is switched off.

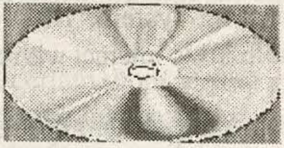
The most common storage devices used in computers are :
(i) Floppy Disk (ii) Hard Disk (iii) CD ROM



(i) **Floppy Disk :** A floppy disk is a thin circular plastic disk coated with a magnetic material. This plastic disk is protected within a square shaped hard outer cover. A floppy disk is primarily used to store data on it. It can also be used for transferring data from one computer to another computer. In order to read and write data stored in the floppy disk, the user has to insert it into the floppy disk drive, which is connected to CPU (Central Processing Unit). A floppy disk can store much less data than a hard disk. The floppy disks, which are more commonly used now days, can store data up to 1.44 mega byte (MB) and its size is 3.5" (three and half inches). To store a large program, more than one floppy disk may be used. The computer gives a message when a disk is full and another floppy is required to store the remaining program.



(ii) **Hard Disk :** In a hard disk, information is stored permanently. It is completely sealed and placed inside the System Unit. The capacity to store data in a hard disk is much more than a floppy disk. Presently hard disks are available with capacity of 20GB, 40GB, 80 GB etc.



(iii) **CD-ROM :** CD-ROM is also used to store or transfer data. It is inserted in the CD Rom drive in the same way as we put a CD in a CD player. It is a circular shaped disk, which can store data more than a floppy but less than a hard disk. The capacity of the CDs are around 650 MB or more.

3.9 DIFFERENTIATING BETWEEN HARDWARE AND SOFTWARE

HARDWARE

Hardware is the machinery of a computer. This means the electrical, mechanical or

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the electronic parts of a computer, which can be seen, or touched are the hardware. Thus it includes the input devices, output devices storage devices and the peripherals.

SOFTWARE

The instructions that we give to the computer in the form of programs is known as **Software**. We can either create our own software or even buy readymade software. The computer games, the Computer Aided Learning programs, word processing programs etc which we can buy from the market on a floppy disk or a CD ROM are examples of readymade software.

Unlike hardware, software cannot be touched. Software can be seen in the form of icons(symbols),if installed in a computer. To make a computer work, it is necessary to add software in the hardware. Without software, computer is of no use to mankind.

There are two types of Software
(i) Operating or System Software (ii) Application Software

OPERATING OR SYSTEM SOFTWARE

Operating Software is already stored in the hard disk of the computer of recent times. It organizes and manages the work of a Computer. It works hand in hand with the CPU A computer would not be able to function without an operating system. It enables us to interact with the computer in a language, the computer understands.

APPLICATION SOFTWARE

Application software performs certain tasks with the help of operating software. For *example,* typing a letter, doing a calculation, playing a game etc can be performed through various application software available in the market. There are different types of application software programs to perform different tasks.

3.10 Computer and the Internet

By now you must have been acquainted with the word "Internet" either from your school friends or neighbourhood friends.

What do we understand by the term " Internet" ?

It is a network of several computers located far away from each other yet connected together. In this network one computer can use the information present in the memory of another computer.

Let us find out some of the things we can do using the Internet :

- ☺ So far we have been exchanging letters with our friends who stay within our country or outside the country through conventional postal services, which took a lot of time and was expensive. With the help of e-mail (electronic mail) letters can be sent from one country to another in seconds. You can send or receive letters, poems, greetings and even your photograph through e-mail at a very affordable rate.
- ☺ You can also search for information on any topic through Internet. So far we used to consult encyclopaedias for any new information. You name any topic and you will find it in your internet. Say you want to know about any country, an important personality, a musical instrument or even the daily news; all of those things will be available through the "Search engines" in seconds.
- ☺ There is a facility known as "Chat" on the Internet where you can make several friends and chat with the people by typing out messages which get displayed on their computer screen.
- ☺ We can download various softwares from Internet like Games, Music and other softwares which allow sharing amongst users.
- ☺ We can also do shopping through the Internet. Say, certain shops in your city have displayed the photographs, names, cost of the material they want to sell on the Internet. You can book materials through order forms available on the Computer Screen and pay through a Credit Card (of course your father's). You can actually send flowers on your friend's birthday by selecting the type of bouquet and then ordering it through the internet. Booking for Theatre Halls, Railways Reservation, Airlines Seat are all possible through the Internet. Why don't you try ?

Now you must have understood how small the world has become through the Internet.

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15989

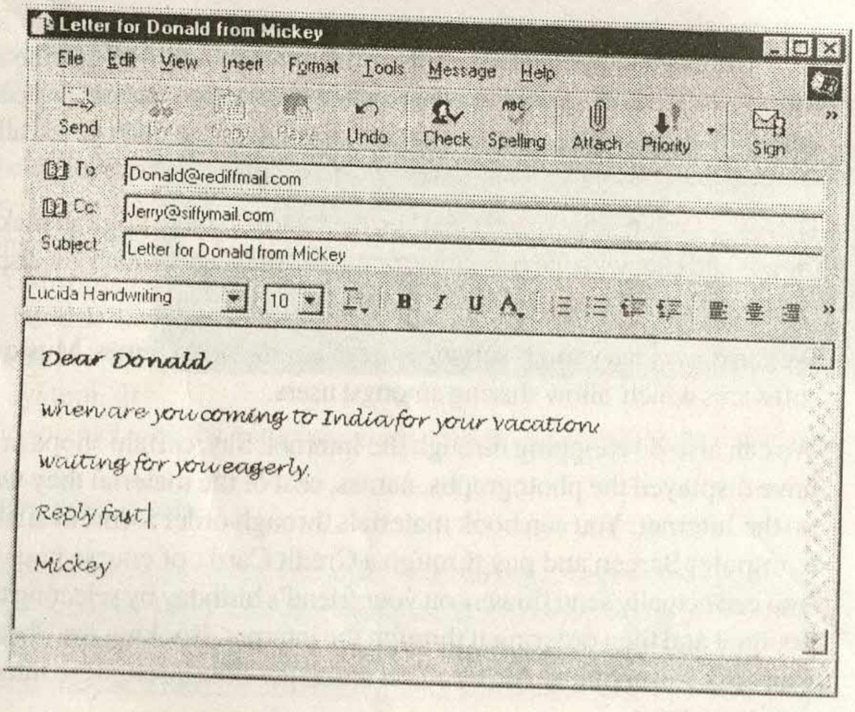
A letter sent through conventional mail

Date : 18/03/2003
Mr. Donald
Donald House,
11 B Newsmans' Road
London.

Sub : Letter for Donald from Mickey

Dear Donald,
When are you coming to India for your vacation.
Waiting for you eagerly.
Reply fast.
Mickey

A letter sent through E-mail



To: Donald@rediffmail.com
Cc: Jerry@siffymail.com
Subject: Letter for Donald from Mickey

Dear Donald

when are you coming to India for your vacation.

waiting for you eagerly.

Reply fast

Mickey

Brainstorming

A. Fill in the blanks.

1. An input device which has a ball underneath it

2. The key which is used for typing capital letters

3. Key used for erasing letters to the left of the cursor on the screen

4. The key which is used to jump to the next line

5.The longest key of the keyboard

B.

1. Name the two most important input devices of a computer ?
2. How many letters of the Alphabet are found on the keyboard?
3. Name two most important output devices of a computer?
4. Which part of the Central Processing Unit undertakes Logical operations?
5. What type of Printer do you have in your school class room?
6. Name three important storage devices?

C: Write the difference between

1. Hardware and Software
2. Input and Output
3. Floppy Disk and Hard Disk
4. Caps Lock key and Shift Key

CHAPTER 4
Getting friendly with the Windows Operating System.

We will learn about

- ☺**Why do we need an operating system ?**
- ☺**Desktop, Icon and Mouse Pointer.**
- ☺**Taskbar and Start Button.**
- ☺**Different terminology of Windows Application.**
- ☺**Different elements of application window.**
- ☺**Shutting down the computer.**
- ☺**Some useful activity you can do with the computer.**

4.1 Why do we need an Operating System?

We communicate to the computer through a program whose function is to translate our requests to the computer. This program is known as " Operating system". An Operating system is a program that acts as the intermediary between the user and the hardware and to some extent between the hardware and the application software.

You can compare the operating system with the driver of a car. Without a driver a car cannot move ; similarly we cannot operate the computer without the help of the operating system.

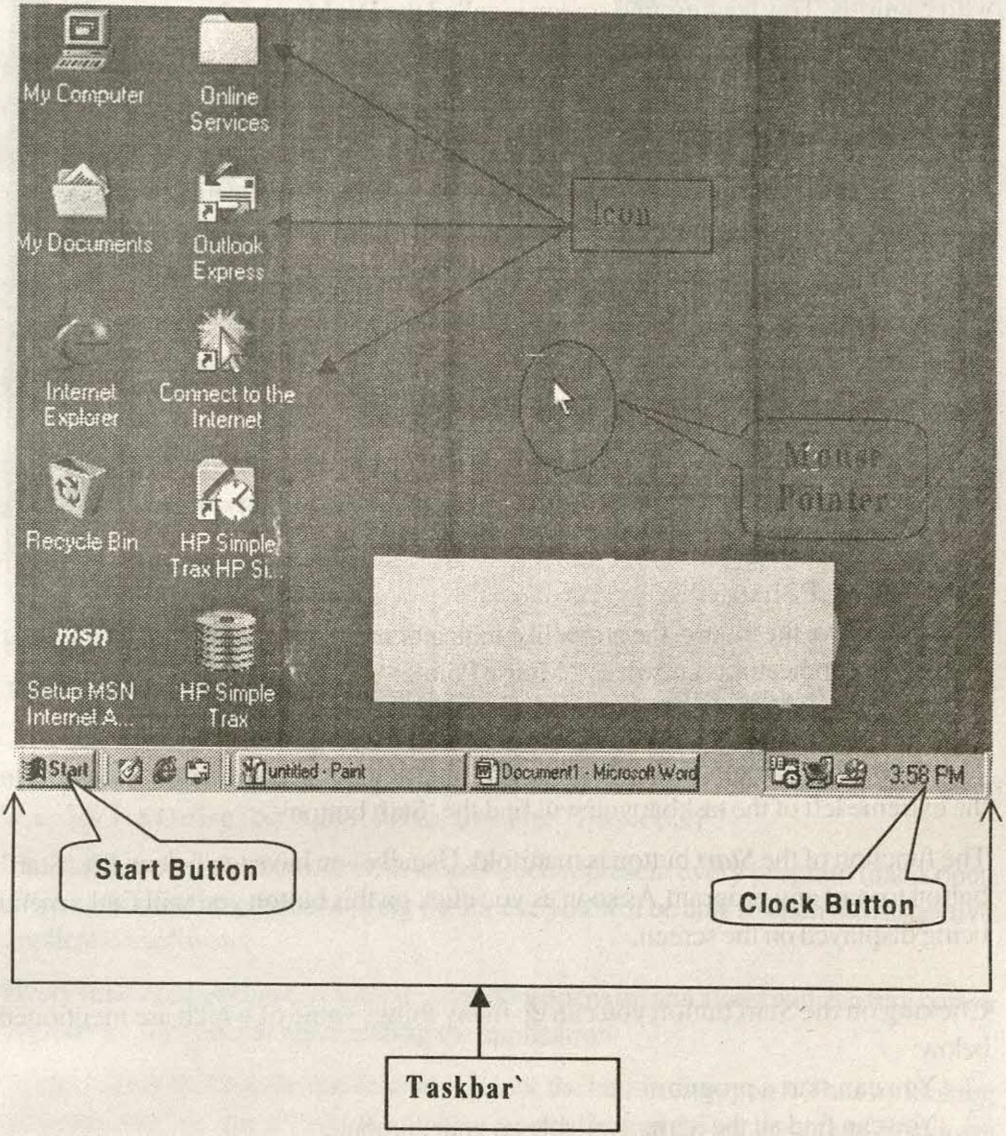
Earlier DOS or Disk Operating System was a very popular operating system. Presently operating system of various versions of windows is prevalent. For example, Windows95, Windows98, Windows 2000, Windows XP etc. are being used by the people throughout the world. However if you became expert in any of the versions, learning the others will be a very easy task.

Ask your teacher which version of windows is loaded in your school's computer ?

A company named MICROSOFT developed Windows program. You must have heard about the Chief Executive Officer of Microsoft. He is none other than Bill Gates.

Windows has become so popular amongst users due to the presence of Graphics within it. In this class we will get introduced to the windows operating system.

4.2 Knowing about the different elements of Windows operating system



4.3 What is a Desktop and what are Icons?

When we switch on the computer, Windows operating system, gets loaded into the memory of the computer. You will find the initial screen filled up with small pictures with captions. This background screen is called the **Desktop** of the computer.

The Desktop displays all the main programs that are stored in the computer in the form of small pictures. These small pictures are called **Icons**. Each of these icons either represents a program or a file.

By double clicking on the icons you can directly open any application software. For example, by clicking on the LOGO icon, you can run LOGO application.

If you take your mouse pointer on any of these icons and double click the left mouse button you will be able to execute the programs represented by the icons.

Apart from the programs stored on the desktop as icons there are other programs also which can be executed from the ***Start*** menu.

You can compare the computer desktop with the top of your study table (desk) where you keep different elements for reading , writing, drawing purpose etc. like books, exercise books, pen , pencil box, eraser, sketch Pens etc.

4.4 Mouse Pointer:

When we move the mouse, the arrow like indicator moves along with the direction of mouse. This indicator is known as " Mouse Pointer".

4.5 What is aTaskbar and Start Button

The taskbar is a horizontal strip like bar spanning across the bottom of the screen. On the extreme left of the taskbar you will find the 'Start button'

The function of the ***Start*** button is manifold. Usually you have to click on the 'Start' button to start any program.As soon as you click on this button you will find a menu being displayed on the screen.

Clicking on the Start button you can do many things some of which are mentioned below:

- ☺ You can start a program.
- ☺ You can find all the items available on your computer.
- ☺ You can avail of helps for running different applications.
- ☺ You can even shut down your computer.

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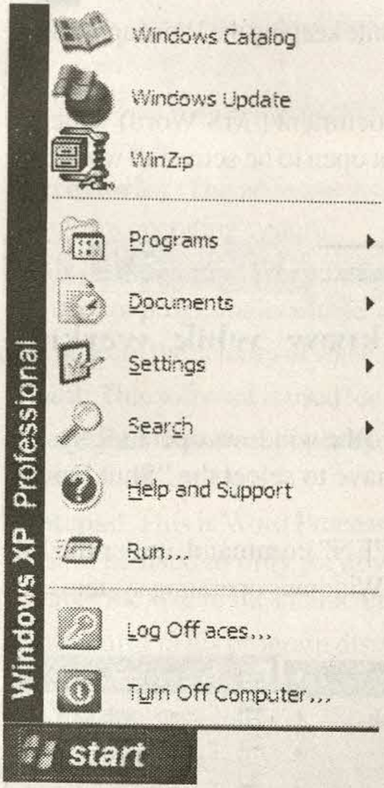
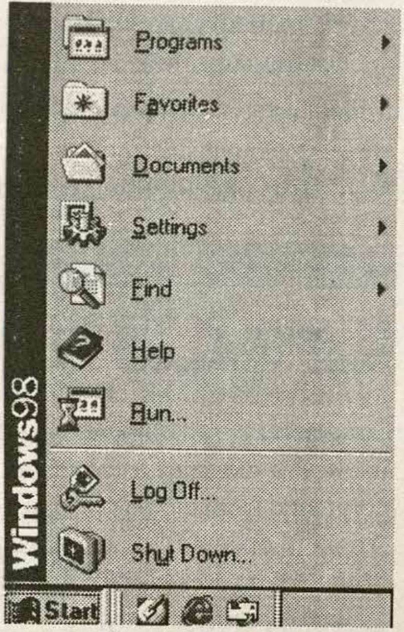


Start menu of Windows XP Professional



Start menu of Windows 98

4.0 What else do you find on the Taskbar?

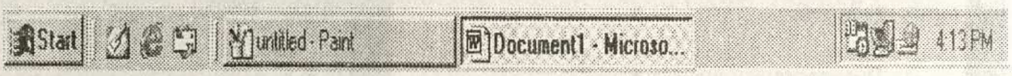
The taskbar contains buttons with icons which represent every program that is open .If you click on these buttons using the mouse you will be able to open the respective application software.

Every time an application is started, a window opens up and along with it a tiny button appears on the task bar representing the application.

Again when you close the application window, the button disappears. Thus by looking at the taskbar we can tell which window is open. In fact the advantage of Windows operating system lies in the fact that more than one window can be kept open at any point of time.

For, example you may work on the Paint application while keeping the Word application open at the same time.

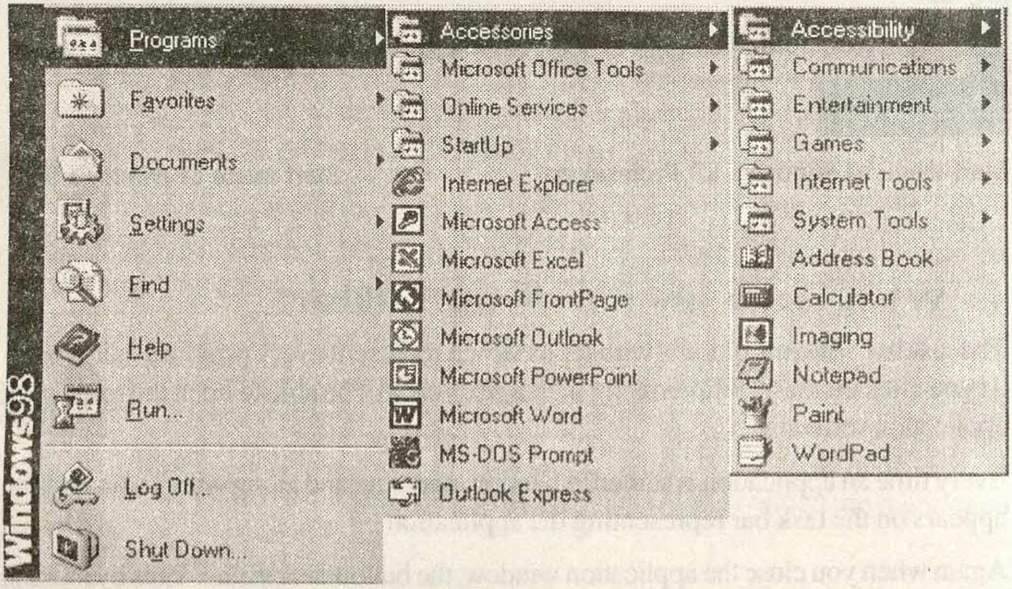
In the taskbar below we find a word processing document (MS Word) which is currently active and another Application –Paint kept open to be activated whenever required by clicking through the mouse.



4.7 Some of the terms you should know while working with Windows

Commands: A command is a feature that is built into the windows operating system itself. For example to come out of windows you have to select the "Shut Down" command from the Start Menu.

Again to open a file , you have to click on the "OPEN" command under the File Menu. There are several commands available in the Windows operating system each having a specific activity.



Applications: For running the computer you need an operating system. You have certain features coming with your operating system. There are special software that need to be separately installed in your computer. For example MS OFFICE is such a

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software where we have different programs built within it like MS Word, MS Excel, MS PowerPoint etc.

Again a Car Racing Program is another such program you may separately install in your computer.

Accessories : The accessories are small programs that are available along with the windows operating system.

Click on Programs. You will find Accessories. Click on Accessories. You will find a number of programs available some of which you will learn in this class.

Let us learn the activity of some of the programs available under the Accessories Menu.

Paint: This software is used for drawing and painting pictures on the computer screen.

Word Pad: This is a simple Word processing Program for writing small documents, letters, message etc.

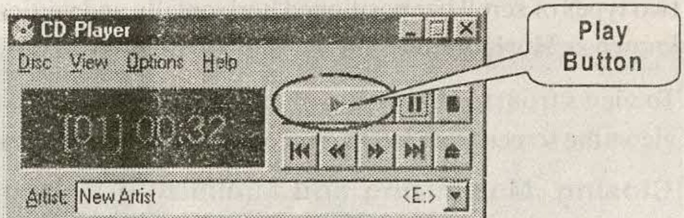
Notepad: This is Word Processing program with lesser facilities than Word Pad and should be used to only jot down points or numbers like a rough pad. You cannot change the size of the characters or make them italics or bold.

Calculator: This program displays a live calculator on the screen and works exactly like a hand held calculator. You can make all necessary calculations through it.

Games: This software has several games for you to play. Ask your teacher to explain each of the games.

Multimedia : This is a folder containing many programs. One can play a musical CD with the help of CD player program. If you have a musical CD put it in the drive.

Click on Program **Click on** Accessories **Click on** Entertainment **Click on** CD Player.
Click on "**Play**" Button and enjoy the music.



Artist: New Artist <E:>

Title: New Title

Track: Track 1 <01>

Total Play: 38:52 m:s

Track: 03:53 m:s

4.8 Diffrent elements of the Application window:

When we start an application like Ms-Word, Ms-Excel and Power Point etc, a window appears on the screen (depending on the application the screen will vary). This window is known as " Application window"

You will find different elements in application windows like Control Button ,Toolbar, Menu Bar, Status Bar etc. which opens along with the application window.

Menu Bar

A menu bar consists of list of command in the form of menus and submenus by which we can perform several jobs on the particular application.

Say, you want to open a particular document in word-processing application, you have to click on **File** menu. The File Menu will appear. Then click on **Open** command.

Toolbar

A toolbar also consists of command in the form of buttons with small pictures. There are several toolbars like Standard, Formatting , Drawing, Picture, Table Borders etc. Commonly used commands like Creating a file, opening a file, saving a file are available in **Standard** and **Formatting Toolbar.** These toolbars are positioned below the menu bar.

With the help of toolbar we can also open a document in word processing application by clicking on the Open Button. 📂

Scroll Bar

Scroll bar is a strip by which we can easily move around any application.There are two types of scroll bar positioned horizontally and vertically. They are respectively known as **Horizontal scroll bar** and **Vertical scroll bar.**

To views from top to borrom of any application we use the vertical scroll bar ; to views the screen from left to right or right to left we use the horizontal scroll bar.

Closing, Maximizing and Minimizing a Program through Control buttons.

On the topmost right corner of the title bar of almost every application window you will find a group of three buttons placed one beside the other. These are referred to as Control buttons. These three buttons are very useful in windows operation. They are respectively from the right:

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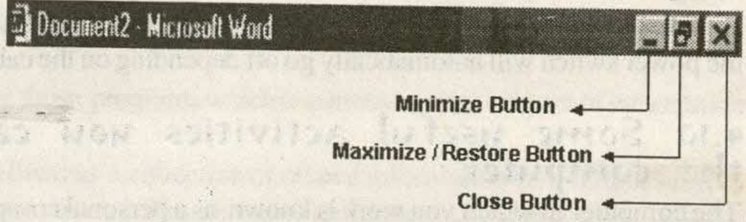
1. Close button
2. Maximize button
3. Minimize button



You might want to come out of a program while working with it after having completed your job. In such cases you have to click on the **close** button found on the extreme upper right corner of every window.

Next to the **close** button on the left you will find the **maximize** button followed by the minimize button.

In case you are not interested in working with a particular application for some time and may want work upon it later you should click on the **minimize** button. Immediately you will find your program window reduced to a tiny button on the taskbar.

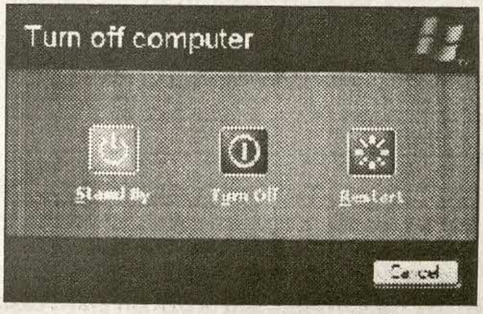
To increase the size of the window so as to cover the entire screen you have to click on the Maximize button.

4.9 Shutting down your computer

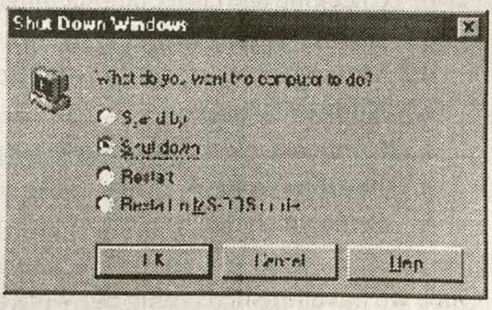
Before switching off the computer you must shut down the windows. This protects the data stored in your hard disk.

How to shut down the computer?

Click the 'Start' Button on the Task Bar. You will see 'Shut Down Windows' screen in which, 'Shut Down' or Turn Off option is already selected. Clicking on the 'OK' Button will turn off your computer.



Shut Down Windows of Windows XP Professional



What do you want the computer to do?

○ Stand by
● Shut down
○ Restart
○ Restart in MS-DOS mode

Shut Down Windows 98

A message on the screen will ask you to put the power switch *on the off position* or the power switch will automatically go off depending on the cabinet used.

4.10 Some useful activities you can do with the computer

The computer in which you work is known as a personal computer or a PC. By now you have come to know how a computer and the different input and output devices work. You will now learn about some of the intersting and useful ways to use a personal computer.

We know that a computer and all its devices are known as hardware; whereas the programs that are used with the computer are called software.

Software is a set of instructions that tell a computer what to do. There are thousands of computer programs developed over the years which can be used with a personal computer. These can be educational programs, game programs, business programs etc.

We will tell you about three different programs which are useful in our daily lives and learn some of the many things you can do with these programs. These programs include a Word Processing program, a spreadsheet program and a database program.

Word Processing Program

Whether you are writing a letter, an application or a story on a computer, a word processing program can do us a lot of help in many things as given below :

a. Erasing incorrect words
b. Checking and correcting spelling.
c. Checking grammar
d. Moving one sentence or word from one position to another.
e. Numbering page
f. Converting from lower case to upper case and vice versa
g. Inserting pictures.
h. Setting margins

Once we have finished typing our work as a file, we can save our work on hard disk or on a floppy disk. We can later open the file and make changes if we want. We can also use the word processing programs to tell the printer to print out a copy of our work.

Database Program

Database programs are those programs which consists of a large amount of information in organized manner.

A database may be defined as a collection of related information on a certain subject. A database is a software package that can store huge amount of data and also help the users to analyse data in many ways like sorting ,searching and modifying.Some examples of these programs include encyclopedias, dictionaries and telephone directories, Students Result database etc.

Let me explain through the help of an example:Say the results of the various terms of each of the classes of your school can be stored in a database of your school computer. At any point of time you can get the names of the highest scorer in each class,average marks scored by a specific student of a class or many such data.Even after ten years if you want to find out who scored the highest in the class in a specific year you will be able to find out in a second.

Say, You want to find out those name in your class who has scored more that 90 marks in mathematics, you can easily find out. Most commonly used database software's are MS – ACCESS, DABASE-III+, Foxpro etc.

Spreadsheet Program

We have just learnt that to write letters, stories ,essays etc. a wordprocessing program comes to a lot of help.Word processing programs deal primarily with texts.For making simple as well as complex calculations with numeric data and analysing them through various charts different types of spreadsheet programs are available.These spreadsheet proforms can performs different calculations with high speed and accuracy.

For example if you want to analyse the marks of all your exmination,you can get the total marks ,the highest marks received in a particular subject and lowest marks scored in a subject in seconds.You can use these programs to maintain cricket scores of diffrent countries ,highest scorer,etc.

Even if you go to the market along with your mother you can find out the total expenses every day and the maximum expenses you have made in a particular day of the month. Ms Excel,Visicalc,Lotus 123 etc. are some popular spreadsheet programs.

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Chapter 5

Learning to paint through my computer

We will learn about

- ☺ **Drawing board inside your computer.**
- ☺ **Tools for drawing and painting.**
- ☺ **Familiarising with colour palette.**
- ☺ **Learning to draw square and rectangle with the rectangle tool.**
- ☺ **Learning to draw an ellipse with the ellipse tool.**
- ☺ **Learning to draw a triangle with the polygon tool.**
- ☺ **Learning to draw a curve with the curve tool.**
- ☺ **How to come our from the paint program.**
- ☺ **Learning to draw geometric shapes with different colours.**
- ☺ **Utility of Copy, Cut and Paste command.**
- ☺ **Learning to insert captions in your picture.**
- ☺ **Utility of View menu.**

5.1 Drawing board in your Computer

We have already learnt about Paint application in our earlier classes. Paint is used in the windows environment for drawing and painting pictures.

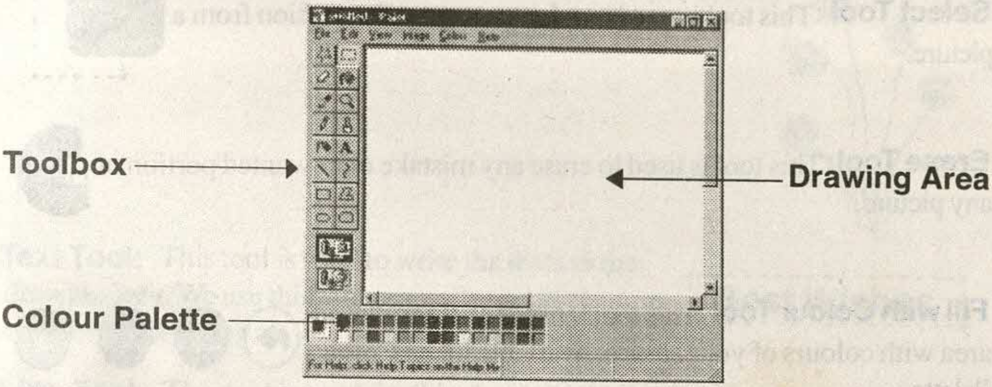
We can draw line , squares, rectangles, circles, triangles and many other shpaes using tools from paint application.

You will find there are about 16 tools found in the toolbox each having a specific function.

There is also a color palette on the paint screen to select colours for paining purpose.

On the drawing board of Paint application one can draw different pictures using mouse and the tools given in the tool box. The drawing board is the blank space on Paint screen to draw various figures.

INITIAL SCREEN OF PAINT APPLICATION



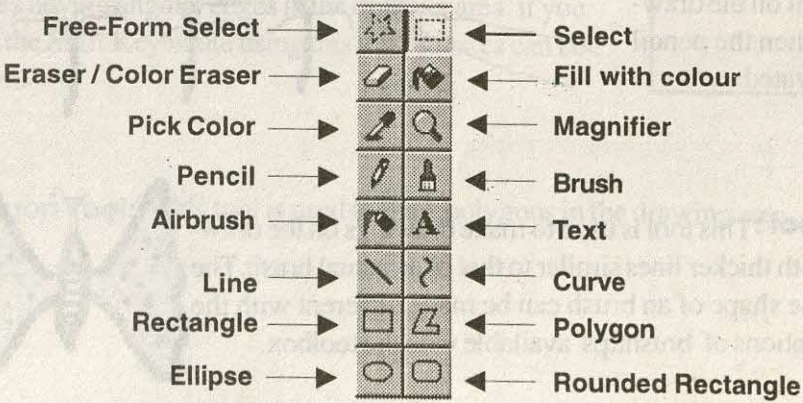
5.2 Where do we find the tools to draw and paint?

The toolbox is usually found on the left side of the drawing area.The toolbox contains different tools to draw, paint or modify different figures with the help of different tools. The different tools available are pencil, eraser, brush , text, magnifier, rectangle and many more. We will learn about each of the tools and their function in this class.

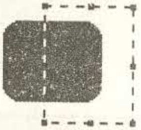
5.3 Where do we find the color palette

We find the color palette at the bottom of the Paint screen.We can choose a specific color by clicking on it by our mouse. The active color is displayed immediately

The following tools in the tool box helps in colouring ,drawing and typing the text. We have to click the mouse to select the tool. The selected tool will be highlighted.

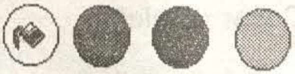


Let us see the functions of each tool.

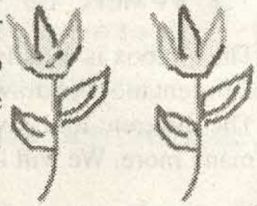


Select Tool : This tool is used to select a rectangular portion from a picture.

Erase Tool: This tool is used to erase any mistake or unwanted portion of any picture.

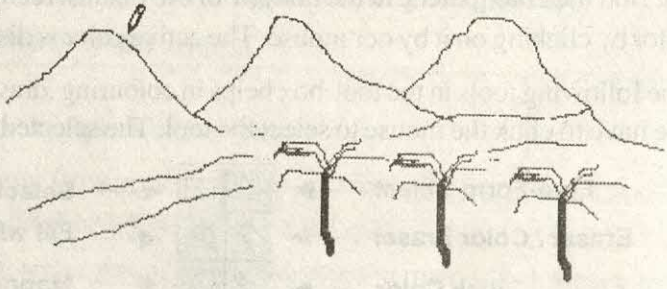


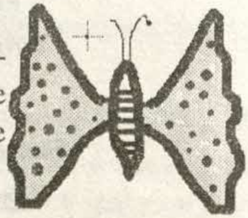
Fill with Colour Tool : This tool is used to fill any closed area with colours of your choice, available in the Colour Palette.



Pick Colour : This tool is used to select a specific colour from a picture and then use it in another area. We do not need to select the colour from the colour palette. In the adjacent picture we pick the colour of the petals of one flower with the pick tool and paint the petals of the second flower with the same colour.

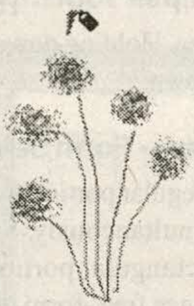
Pencil Tool : This tool is used to draw with thin lines in the drawing area. The mouse-cursor looks like a pencil on the drawing area when the pencil tool is activated.





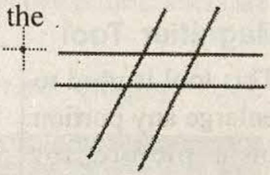
Brush Tool : This tool is used to make drawings on the drawing area with thicker lines similar to that of an actual brush. The size and the shape of an brush can be made different with the different options of brushtips available with the toolbox.

Airbrush Tool : This tool is used for spraying the colours on the drawing area. This is similar to that of an actual Air Brush.

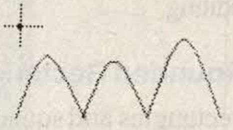


Text Tool: This tool is used to write the texts in the drawing area. We use this tool primarily to add captions or titles to a drawing.

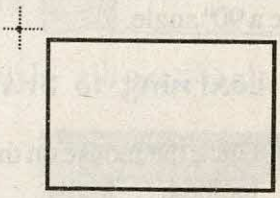
Line Tool: This tool is used for drawing straight lines on the drawing area,
having various thickness.



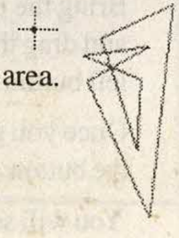
Curve Tool: This tool is used to draw curved lines in the drawing area with maximum of two bends.



Rectangle Tool : This tool is used to draw rectangles having angular edges in the drawing area. If you hold the Shift Key while using this tool, squares can be drawn.

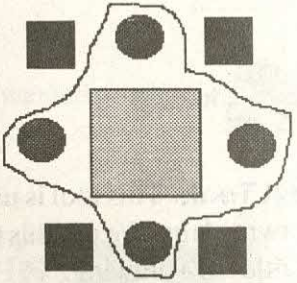


Polygon Tool: This tool is used to draw polygons in the drawing area.

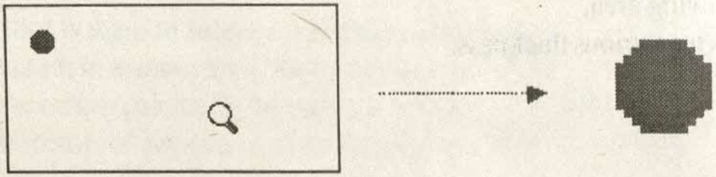


Ellipse Tool : This tool is used to draw ellipse in the drawing area. Holding down the shift key if you use this tool a circle will be drawn.

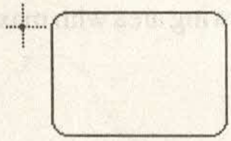
Free – Form Select Tool : This tool is used to select irregular portion from a picture or from different pictures simultaneously. Since " Select" tool can only select a rectangular portion it can not be used everywhere and hence free -form select is required.



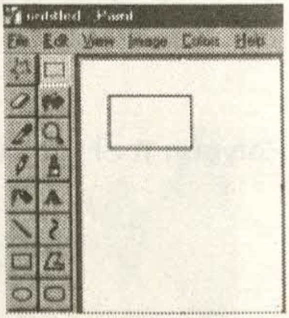
Magnifier Tool : This tool is used to enlarge any portion of a picture for proper viewing and editing.



Rounded Rectangle Tool : This tool is used to draw rectangles and squares having rounded off edges. In conventional rectangle and squares, the edges are sharp and have a 90° angle.

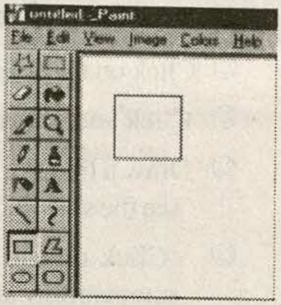


5.4 Learning to draw rectangle with the rectangle tool



- Click the mouse on the rectangle tool available in the toolbox.
- Bring the mouse on the drawing area, click at a point and drag the mouse diagonally on the screen with the left button pressed.
- Once you get the desired size of the rectangle, release the button.
- You will see a rectangle drawn on the drawing area.

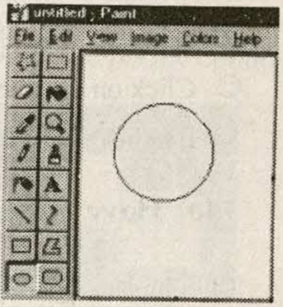
5.5 Learning to draw a square with the rectangle tool



- Click on the rectangle tool of the tool box with your mouse.
- Bring the mouse in the drawing area.
- Pressing the shift key click at a point to mark the starting point and drag the mouse diagonally with the left button pressed. You will see instead of a rectangle, **a square** has been drawn.

You can also draw the rounded rectangle or rounded square in the same manner as you have drawn the normal rectangle or the square by using the rounded rectangle tool available in the toolbox. The only difference between this two is the corners are rounded off instead of having angular edges.

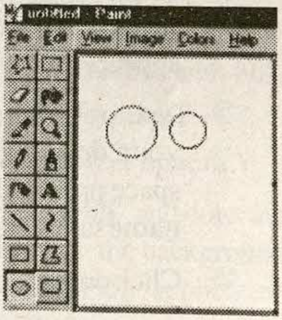
5.6 Learning to draw an ellipse with the ellipse tool.



(Ask your teacher to tell you the difference between an ellipse and a circle)

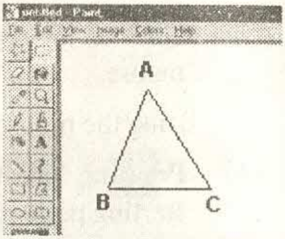
- Select the ellipse tool from the toolbox and bring the mouse pointer on the drawing area.
- Click at a point to mark the staring point, press the left button and drag the mouse diagonally to draw an ellipse. After reaching the desired size of the ellipse release the mouse button.

5.7 Learning to draw two circles with ellipse tool



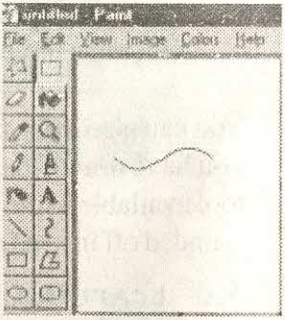
- Select ellipse tool from the toolbox.
- Click at a point to mark the starting point.
- Pressing the shift key drag the mouse on the screen with the left button pressed .
- Release the mouse button after you have drawn the circle of your desired size.
- Repeat the whole exercise again to draw the second circle.

5.8 Learning to draw a triangle with the polygon tool



- Click on the polygon tool with the mouse and select it.
- Click and drag the mouse on the drawing board.
- Draw a line say, AB. Click at a point say C. You will see the side BC is automatically drawn.
- Click on the point A again. The side i.e.CA is automatically drawn.
- You can similarly draw a four, five, six or many sided sided figure.

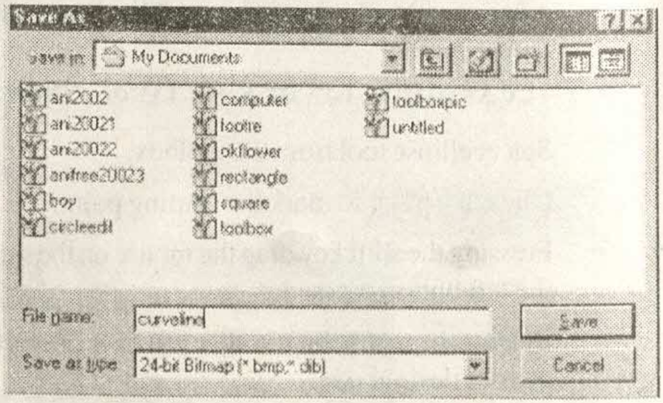
5.9 Learning to draw a curved line with the curve tool.



- Click on the curve tool and select it.
- Draw a line on the drawing area and release the mouse button.
- Click on the line. Drag it to make a curve and release the mouse button.
- By clicking on different points outside the line you can draw different shapes.

5.10 How to come out of Paint Program

- Click on **File** menu on the Menu Bar and then on **Save** option.
- The **Save As** dialog box appears on the screen.
- Type a relevant name to your drawing in the space provided as **File name** say,curveline.



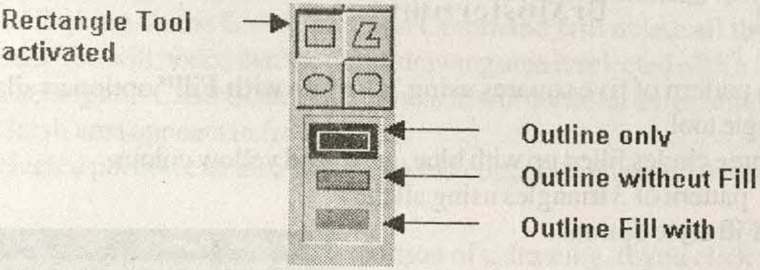
File name: curveline

Save as type: 24-bit Bitmap (*.bmp;*.dib)

- Click on **Save** button. The drawing is thus saved in the file for later use. You can now start a fresh drawing.

5.11 Learning to colour rectangles, circles and triangles

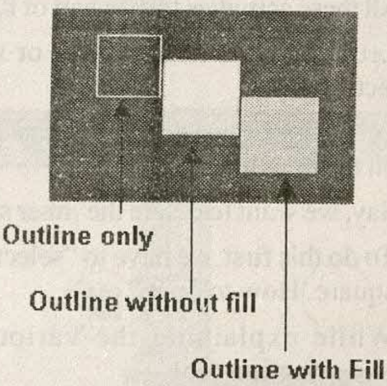
In the earlier class you have learnt to colour pictures with the help of **Fill with colour** tool. Paintbrush offers colouring styles of closed shapes within the tool itself.
As soon as we click on the rectangle tool you must have noticed that there are three styles made available to you below the tool box for filling them with colour.



They are (i) **Outline only**. (ii) **Outline without fill** (iii) **Outline with Fill.**
As you learn to draw rectangles you will learn to use each of the three options.
Let us first colour the drawing area with a colour to understand each of the options clearly.

Say, Let us colour the background drawing area red by clicking on the drawing.

- Click on the yellow colour from colour palette so that yellow becomes the fore colour.
- Click on the first option of the fill style i.e. **"Outline only"** option and then clicking on the rectangle tool to draw a rectangle. You will find a rectangle is drawn with yellow as the outline.



(Keeping the fore colour selected as yellow let us observe the other options.)

- Click on the second option of the fill style i.e. " **outline without fill**" and draw the rectangle. You will see that the outline of the rectangle remains, the background becomes devoid of any colour and thus takes the colour of the Paint application screen, which is white in this case.

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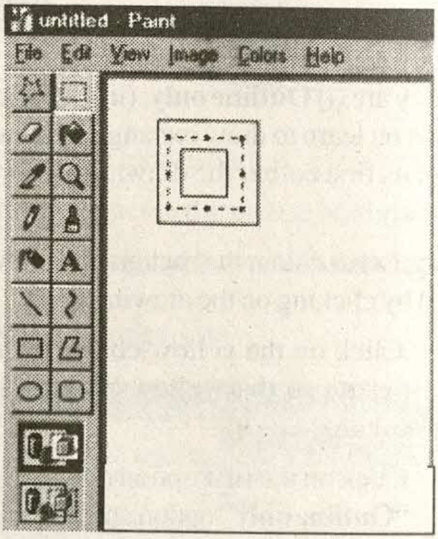
- Click on the third option " **Outline with Fill** ". You will find while you drag the mouse a rectangle is being drawn which is already filled up with yellow colour.

The fill style options are available with (i) rectangle (ii) Polygon (iii) Ellipse (iv) Rounded rectangle.

Brainstorming

- Draw a pattern of five squares using "**Outline with Fill**" option available from rectangle tool.
- Draw three circles filled up with blue, green and yellow colour.
- Draw a pattern of 3 triangles using all the three **Fill style** options.

5.12 Editing



One you have made a drawing you might have to make some changes in it such as deleting, copying, moving a part or the full picture etc. All these activities form a part of Editing.

Let us learn to delete a part or whole of a picture.

Let us draw two squares,one inside the other on the drawing area.

Say, we want to delete the inner square.

To do this first we have to "select" the inner square. How to do it ?

While explaining the various tools you already learnt Paint provides two **selection** tools.

(i) **Free form select tool**

(ii) **Select Tool**

In this case let us choose the select tool.

Click on the select tool from the toolbox with the mouse.

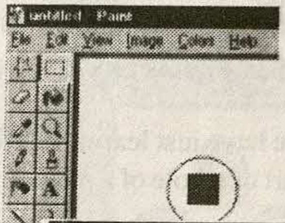
Move the mouse inside the outer Square, position the pointer at one position_ and drag the mouse diagonally to another by holding the left button ensuring the inner square is selected. You will see a box with dotted lines is formed as you drag the mouse. This dotted line box is the boundary of the portion , you have selected.

- ☺ Press the **Delete** key from the keyboard and you will find that the inner square is deleted. Alternatively, the seleccted portion can be deleted by pressing on the **Clear Selection** command under the **Edit** menu.While selecting a particular drawing or a portion of a drawing we use the select tool. In case you want to clear the entire drawing area you may click on the **Select All** command from the **Edit** menu. Clicking on the Clear Selection Command will delete all the existing drawings. You will notice that the entire drawing area is selected with a dotted line box. Clicking on " **Clear Selection**" command will delete all the existing drawings and a fresh area appears in front of you.

The selected portion can also be moved and copied to other part of the drawing area.

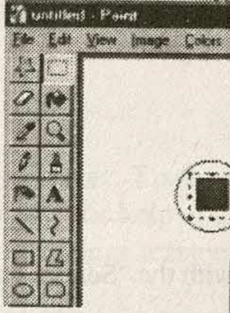
Remember that after selecting any portion of a drawing, if you click inside the drawing area, the selected portion gets deselected.

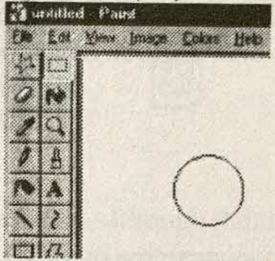
5.13 What is the function of the CUT command

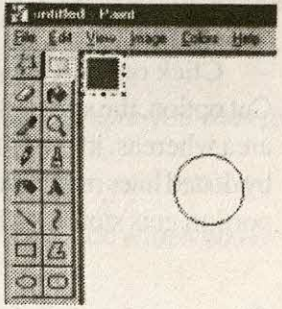


- ☺ Let us draw a circle and then a square inside it.
- ☺ Let us colour the square red.
- ☺ Select the inner square from the drawing area through the **select** tool.
- ☺ Click on **Edit** menu from menu bar.
- ☺ Click on **Cut** option. What happened to the selected portion ? It has been cut from your drawing.

It has suddenly disappeared from the drawing area.







How to " Paste" the selected portion of the drawing?

The portion of the drawing that was cut (or was temporarily deleted) can be inserted again at the same location of the drawing or even pasted at more than one location. Isn't it very interesting?

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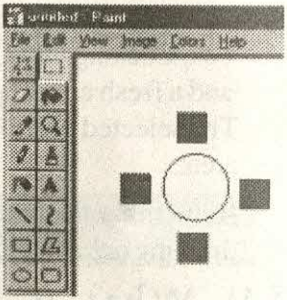
In the last picture you found after you have clicked on the **Cut** option of the Edit menu the square had disappeared from the drawing area.

- Click on the **Paste** option from the **Edit** menu.
- You must have noticed that the deleted portion is back on the drawing area but not placed at its original position.

So where is it placed?

It is pasted at the top left corner of the drawing area.



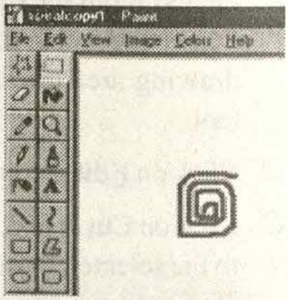
- Place the mouse pointer on it and drag the picture. You will notice that you can move the picture with the help of your mouse and place it at any point of the drawing area.
- Place the selected portion on top of the circle as shown.

  If you click on the **Paste** option again the same portion will get inserted again.

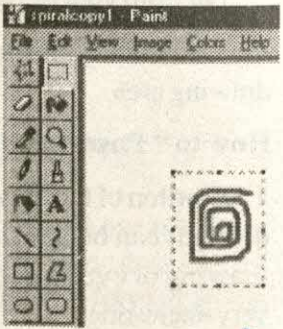
You may choose to place the drawing at some other location and create new patterns.

5.14 How to copy a part or whole of a picture?

We have just learnt to select and cut a portion of a drawing. Let us learn to copy a part or whole of a picture.

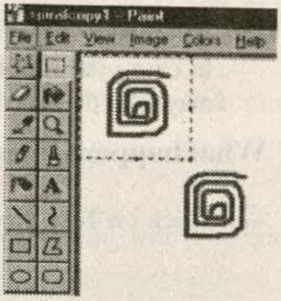


- Let us draw a pattern on the drawing area with the help of brush tool. Say a spiral pattern.

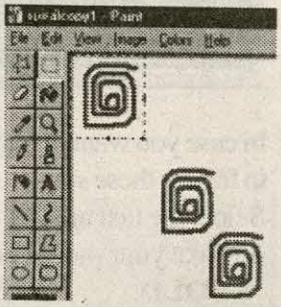


- Select the pattern with the "Select" tool.
- Click on the **Copy** option from the **Edit** menu. In the Cut option, the selected portion is removed from the drawing area whereas, in the **Copy** option the selected area bounded by dotted lines remains intact. Actually the Copy of the seleced portion gets stored in the Clipboard.

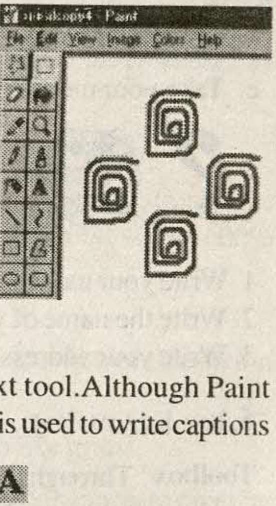
- Click on **Paste** command from the **Edit** menu. You will find a duplicate of the selected portion is pasted on the top left corner of the drawing area.



- You may drag this picture and place it beside your original picture.



- By clicking on the **Paste** command subsequently you will be able to have any number of copies of the selected picture you want, and thus create a pattern.

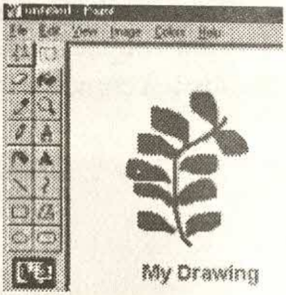


5.15 What do we do with the Text Tool

We can type text into the drawing area with the help of text tool.Although Paint application is used primarily for making of drawings ,text tool is used to write captions and also may be used for typing explanations.

- Select the text tool from the tool box indicated by letter. A
- Click with your mouse on the drawing board at the location where you want to type the text.
- Drag your mouse with the left button pressed.

You will find a box with dotted line appears on the drawing area inside which you are supposed to type the text.

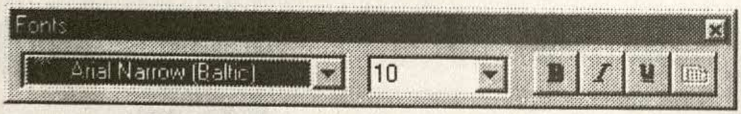


☺ You may type the desired text. Say, " **My Drawing**".

In case you want to change the style, font size etc. you may take the help of **Text Tool** under the **View** menu.

What happens when you click on the Text toolbar ?

☺ Click on **Text Toolbar** under the **View** menu.



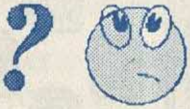
In case you want to make your text, bold or italics or want to underline them you have to follow these steps:

Select the text area by dragging the mouse pointer over it.

a. Take your mouse pointer to the letter **B** and click on it if you want to make it **BOLD**.

b. Take your mouse pointer to the letter *I* and click on it if you want to make it *ITALICS*.

c. Take your mouse pointer to the letter U and click it if you want to UNDERLINE



Brainstorming

1. Write your name in capital letters below a Cartoon of yourself.
2. Write the name of your school and make it bold.
3. Write your address and underline it.

5.16 Learning some commands of the View menu

Toolbox : Through the help of this option we can display or hide the toolbox. The tick mark against the tool box indicates that the tool box is currently active.

Colour Box : This option enables us to show or hide the colour palette located at the bottom of paint software. The tick mark against this option indicates that the colour box is currently displayed on the paint screen.

Status Bar : The status bar located below the colour palette at the bottom of the

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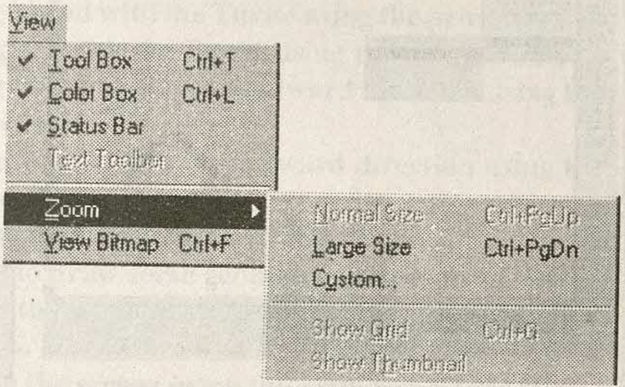
paint screen ,displays the position of the cursor. This option allows us to hide or display the status bar ,which is displayed at the bottom of the screen.

Zoom: The Zoom command has a number of options for displaying the pictures in various sizes and methods.

Important commands under View Menu

The **View** menu provides us with various commands to view our drawing with different forms.

Zoom : Click on the **Zoom** command from **View** menu. You will see the following options



We can change one pixel at a time which helps editing easier. We can bring about changes or modifications as required on the drawing using Zoom feature. The orizinal size of the drawing will be displayed at the upper left corner of the screen.

Large Size : Large size option will magnify the drawing to the maximum size.

Custom : Custom size option allows us to select the degree of magnification of the original picture. You may wish to magnify the picture by 100%, 200%, 400%, 600% or more.

You can choose any option as per your requirement.

Normal Size : After you use the larze size option you may use the normal size option to bring the picture to its original size.

If you select this option the drawing board appears with graph like grids.

This is useful while drawing a picture with perfect size or modifying picture pixel by pixel. Clicking on this option again will hide the grid.

Show Thumbnail : If you select this option you can view the whole drawing in a small reference window If you magnify a drawing only a portion of the drawing will be displayed through the Thumbnil window. You have to scroll through the drawing to

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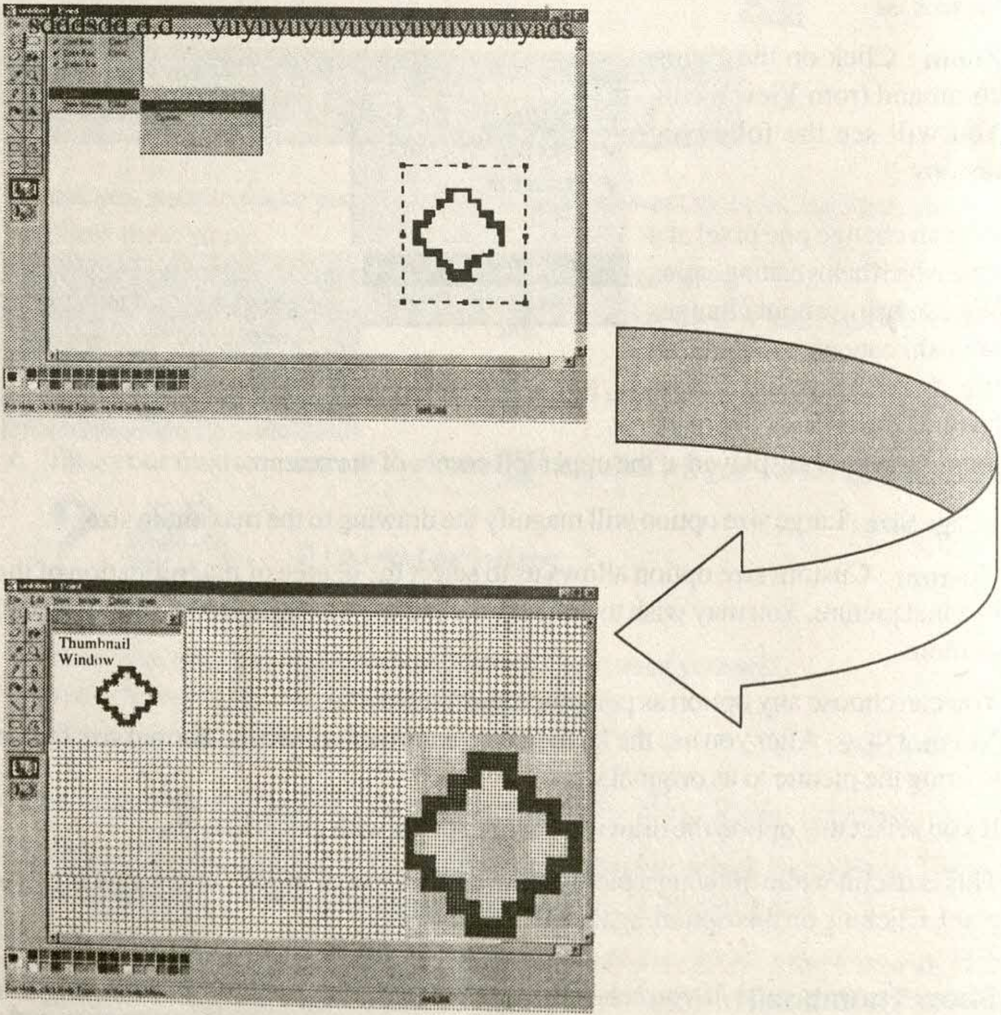
view the entire drawing. To view the whole drawing side by side this option can be selected. Clicking on this option again will remove thumbnil window.

View Bitmap : Selecting this option will remove the colour pallette, tool box, Status bar, the menu bar and will display the drawing in the full screen. Clicking on the drawing area will return the screen to normal size.



Picture Showing a drawing modified Pixel by Pixel with the help of grid.

CHAPTER 6

Learning to work with LOGO

We will learn about

- ☺ **Introduction to LOGO.**
- ☺ **Learning the primitives.**
- ☺ **Knowing about the Turtle.**
- ☺ **Familiarising with the LOGO screen.**
- ☺ **Coming out of LOGO.**
- ☺ **Moving ahead with the Turtle using the primitive FD.**
- ☺ **Backing up with the Turtle using the primitive BK.**
- ☺ **Moving the turtle in the rightward direction using the primitive RT.**
- ☺ **Moving the turtle in the leftward direction using the primitive LT.**
- ☺ **Knowing about the turtle's HOME.**
- ☺ **Lerning to draw some geometric shapes in LOGO.**
- ☺ **Clearing the graphics area using the primitive CLEAR SCREEN.**
- ☺ **Cleaning the screen using the primitive CLEAN.**
- ☺ **Hide Turtle and ShowTurtle.**
- ☺ **Penup and Pendown command.**
- ☺ **Erasing the figures using the primitive PE.**
- ☺ **Learning the primitive REPEAT.**
- ☺ **Learning to draw Square, Rectangle, Triangle and Circle. using the primitive REPEAT.**
- ☺ **Learning more about the LOGO Screen.**

6.1 Introduction to LOGO

We have been drawing pictures on our drawing book with the help of a pencil. By moving the pencil in different directions we have always drawn various shapes and figures. Let us learn to draw various shapes and figures on the computer's screen using a special computer software called **LOGO.**

LOGO is the short form of **"Logic Oriented Graphic Oriented"**.

The software LOGO was primarily developed for school children primarialy by Seymour Pappert . LOGO can be used to draw figures, to write text, to do calculations and to perform logical operation by moving the turtle in different directions.

6.2 What are Primitives?

We have to find out how the turtle moves on the screen? To move the turtle on the screen, we have to give certain instructions to the computer. The turtle can move in a particular direction only after it follows the instructions.

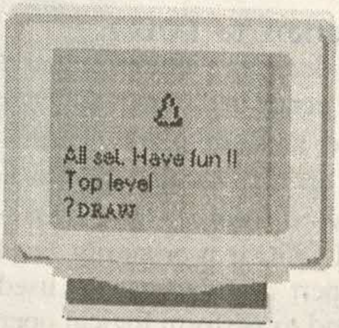
The LOGO commands or instructions are called **primitives**. Primitives must be written appropriately for getting the correct output. The computer also accepts the short forms of some of the Primitives .The spelling or short from of the Primitives must be written correctly. With the help of primitives one can easily draw lines, squares, triangles, circles and several other figures on the screen. LOGO may be used to draw, to type text, to do calculations, and even to perform logical operations .We will learn each of these activities of LOGO in this class. While working with LOGO, a blank space must be kept between the primitive and any number that you write after it. A program is a set of primitives given to the turtle in LOGO.

Let us learn to draw a picture on the computer's screen using **LOGO**.
Ask your computer teacher to load LOGO on the computer. As soon as Logo is loaded, we find the given message at the left top corner of the computer screen

```
All set. Have fun!!
Top level
? _
```

As soon as we type the primitive DRAW the entire message moves at the bottom left corner and a small triangular figure is found at the center of the screen with its pointed tip facing upwards..
Thus you will also find that an interrogation mark **?** appears at the left bottom of the screen which is known as the LOGO prompt and the blinking line next to it is called **cursor** .While the cursor blinks we understand that it is waiting for the instructions from the user.

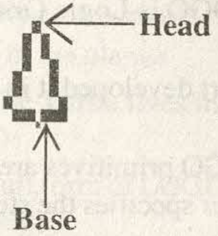
```
All set. Have fun !!
Top level
```



```
All set. Have fun !!
Top level
?DRAW
```

6.3 Finding out about the TURTLE

When we type the primitive DRAW at the Logo prompt a small triangular shaped figure appears at the center of the screen which is known as the logo **Turtle**. The turtle draws figures and shapes as per our instructions.



The logo turtle has a pointed tip (Head) and a broad base (Back).

☺ **Head:** The pointed tip of the triangle is referred to as its head. Some users also refer to it as its nose.

☺ **Back:** The base of the triangle is called its Back.

Where is the Home of the Turtle situated?

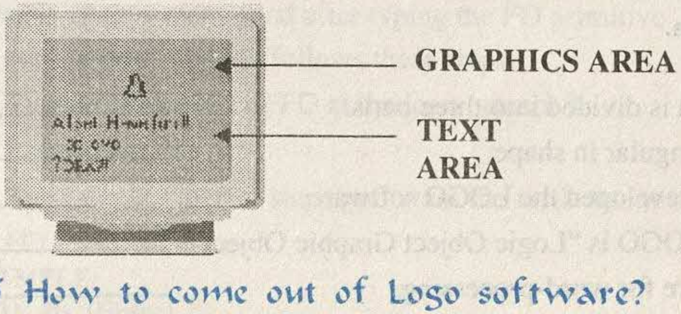
The Home of the Turtle is at the centre of the screen. At the Home position the turtle is found with its head pointed upwards.

6.4 How does the LOGO screen look?

You will find that the LOGO screen is divided into two areas:

☺ **Graphic Area:** This area is used for drawing figures and shapes.

☺ **Text Area.:** This area is used to type or print both primitives and data. Data can be both numbers and texts.



6.5 How to come out of Logo software?

At the LOGO prompt type the word **Bye** and Yeah! You are out of LOGO software.

…………………▶

Keep in mind

☺ LOGO is a computer software. The full form of LOGO is Logic Oriented Graphic Oriented

☺ Wally Feurzeig, Danny Bibron and Seymour Pappert developed it in 1967 in Cambridge, Massa -chusetts.

☺ Graphic area is used to display the figures only . LOGO primitives are used to move the turtle in different directions. The number specifies the steps or units turtle has to move.

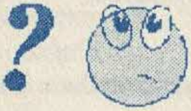
☺ The Text area is used to enter primitive or text.

☺ The instructions, which we give to the turtle are called LOGO **Primitives**.

☺ A set of primitives, given to the LOGO turtle, is known as a program.

☺ The centre of the screen is known as the **Home** of the turtle.

☺ The unique feature of LOGO is 'Turtle Graphics'. The turtle Graphic is a simple set of commands to control a turtle. The turtle is simply a cursor or pointer which obeys the commands. It draws the lines mostly on the screen.



Brain Storming

A. Write True or False.

1. The LOGO screen is divided into three parts. ______________

2. The Turtle is rectangular in shape. ______________

3. Charles Babbage developed the LOGO software. ______________

4. The full form of LOGO is "Logic Object Graphic Object". ______________

5. LOGO is a software for word-processing. ______________

6. We draw pictures in Text Area. ______________

B. Answer the following questions :

1. Write the full form of LOGO.
2. What message will you get when you start LOGO?
3. What are the two parts of a turtle?
4. Describe the LOGO screen ?
5. What is a primitive?
6. What is cursor?

C. Fill in the blanks

1. The Turtle lives in the ____________ of the screen. (left corner/center/top/ right)

2. Full form of LOGO is logic oriented __________ oriented.(grammar/drawing /graphic)

3. __________ is the LOGO prompt. (a> / # / ?)

4. Instructions given to the turtle are known as ______________.(commands/ requests/primitives)

4. ___________ area is used to type Primitives.(Text/Drawing/Graphic)

5. The center of the screen is called the ____________of the Turtle.(House/ residence/Home)

6.6 Moving ahead with the Turtle using the primitive FORWARD or FD

The primitive FORWARD is used to move the turtle in the direction of its head. The short form of primitive FORWARD is FD.

Thus the primitive FORWARD makes the turtle move in front ahead. In LOGO the turtle moves step wise; that is why the number of steps you want the turtle to move is always mentioned after typing the FD primitive

To use the primitive FD follows these steps:

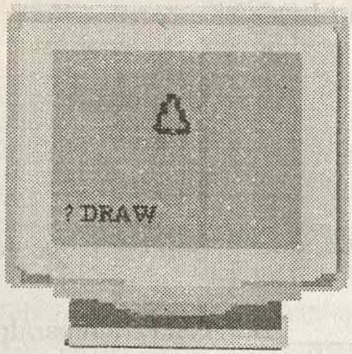
- ☺ Type FORWARD or FD at the logo prompt ?
- ☺ Press space bar
- ☺ Type the number of steps you want the turtle to move and press the Enter key.

EXAMPLE:

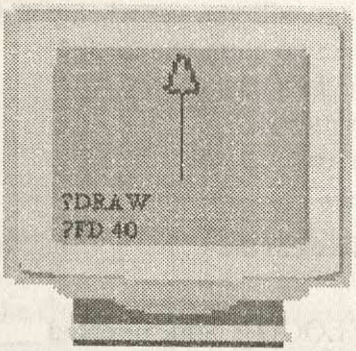
? **FD 40** (Enter)

This makes the turtle move 40 steps ahead.

Always remember to put a space between FD and the number of turtle steps otherwise the computer will give an error message.



```
? DRAW
```



```
?DRAW
?FD 40
```

Brain Storming

Try on your computer the following:

i. FD 45 ii. FD 35 iii FD 20 iv. FD 50
v. FD 10 FD 20 FD 30

Have you noticed that you can give more than one primitive in one line. Why don't you start practising?

Let us see what happens if we forget to put a space between the primitive FD and the number of turtle steps: Say we type FD45 instead of FD 45
Immediately the computer displays the following message on the screen.
This is not a Logo procedure: FD45

Brain Storming

What happens when you type FD 150

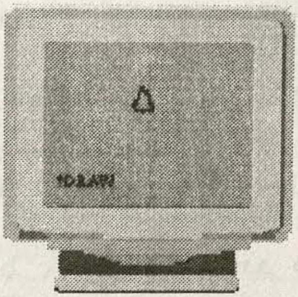
What happens when you forget to put a space between FD and the number of Turtle steps?

6.7 Moving Backwards with the Turtle using the primitive BACK or BK

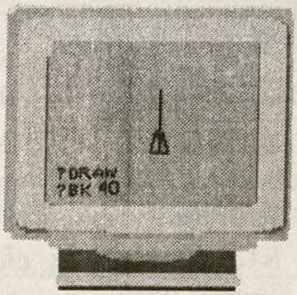
This primitive moves the turtle in the opposite direction of the primitive FORWARD. Thus the primitive BACK or BK pulls the turtle in opposite direction of its head. i.e. in the direction of the turtle's back.

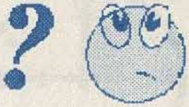
- Type BACK or BK at the logo prompt "?"
- Press space bar.
- Type the number of steps you want to move the turtle backwards from its existing position. The number specifies the number of steps the turtle has to move.
- Number specifies the number of steps the turtle has to move.
- Type the Enter key.

Example: Type BK 30 at the logo prompt "?" and press the Enter key.
This makes the turtle move 30 steps backward from its last position.
Let us see an example where the turtle moves backward by 40 steps from the DRAW position.



?DRAW
(Enter)
?BK 40
(Enter)





Brainstorming

What happens when you forget to put a space between BK and the number of turtle steps?
Type BK45 and see. Write down the output you get from your computer ?

What happens when you type BK 150 ?

Brain Storming

Try it on your computer

i. BK 10 BK 45 ii. BK 15 BK 30 iii. BK 20 BK 30

Moving Forward and Backward

Let's try out moving forward and backward.

Try the following on your computer

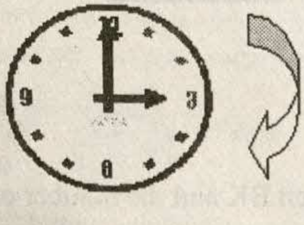
a. FD 30 BK 30 FD 60

b. FD 10 FD 20 BK 3

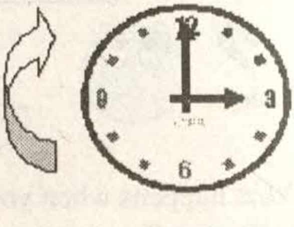
Keep in mind:

- To put a blank space between LOGO primitives and the number of turtle steps.
- The primitive FORWARD/FD moves the turtle in forward direction.
- The primitive BACK/BK moves the turtle along its back i.e. in the backward direction. This backward movement of the turtle is opposite to the direction of its head.

6.8 Moving along clockwise and anti clockwise direction



Clockwise Movement



Anti Clockwise Movement

You will notice that the clockwise movement depicts movement of the hands of the clock in the rightward direction whereas anti clockwise movement depicts movement of the hands of the clock in the leftward direction.

6.9 Moving the turtle in the rightward direction through the primitive RIGHT/RT

We have till now learnt to move the turtle in the forward and backward direction .

The primitive RIGHT is used to change the direction of the turtle's head in the right along the clockwise direction. The short form of the primitive RIGHT is RT

To use the primitive RT follow the given directions:

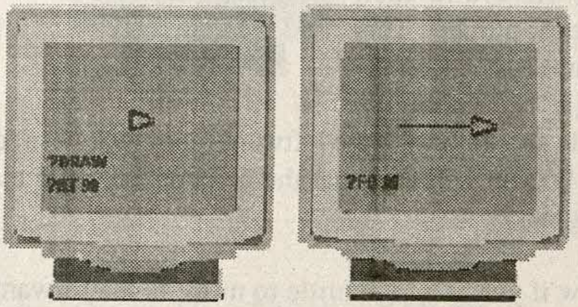
Type RT at the logo prompt **?**

Press SPACE BAR and then type a number. This number specifies the angle by which the turtle should turn in clockwise direction.

Let us see an example:

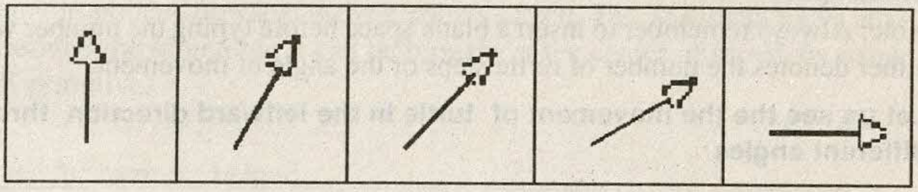
?DRAW (Enter)
? RT 90 (Enter)
? FD 30 (Enter)

You will find that the head of the turtle turns towards right by 90 units (degrees).



Now if you want the turtle to move forward by 30 steps you have to type FD 30.

Let us see the the movement of the turtle in the rightward direction through different angles.



RT 0 FD 30 | RT 60 FD 30 | RT 45 FD 30 | RT 60 FD 30 | RT 90 FD 30

6.10 Moving the turtle in the leftward direction through the primitive LEFT/ LT.

Just the way you have learnt to move the turtle in the rightward direction similarly you can also move the turtle to the left direction by using the primitive LEFT or LT

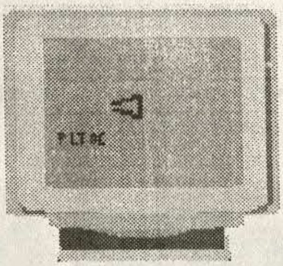
☺ Type LEFT or LT at the logo prompt (?)

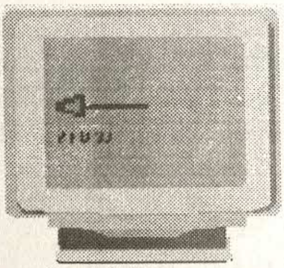
☺ Press space bar

Type a number that specifies the angle by which the turtle turns in anti-clockwise or leftward direction.

Let us see an example:

```
? DRAW (Enter)
? LT  90  (Enter)
? FD 30   (Enter)
```





Always press the space bar key after the primitive and then type the number. This number specifies the angle by which the turtle should turn in the leftward (anticlock wise) direction. As soon as you type LT 90 you will find that the head of the turtle turns towards left by 90 units (degrees).

Now if you want the turtle to move in the forward direction by 30 steps you have to type.

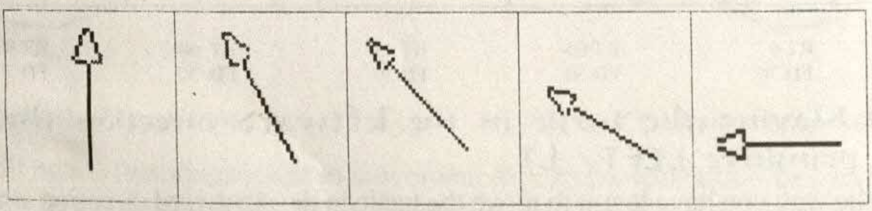
FD **30**

↑

Blank space

Note: Always remember to insert a blank space before typing the number which either denotes the number of turtle steps or the angle of movement.

Let us see the the movement of turtle in the leftward direction through different angles.



LT 0 FD	LT 30	LT 45	LT 60	LT 90

→

Brainstorming

Find out whether there are any errors in the following primitives by trying them out on your computer:

1. LEFT 30 RT
2. FORWORD 35
3. BK 20 40
4. BAK 45
5. RIGHT 60
6. LT RT 70 70
7. LT 4.5
8. RT LT 90
9. RIGHT 20+25
10. RT "45

6.11 Let us find out more about the Turtle's HOME

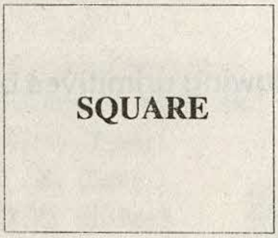
You already know that the primitive **HOME** sends the turtle to its Home position which is located at the center of the screen. At the home position the turtle's head remains pointed upwards in the graphics screen. The Turtle can move anywhere around the screen but it can be brought at the center of screen by using **HOME** primitive.

Let us see the example below:

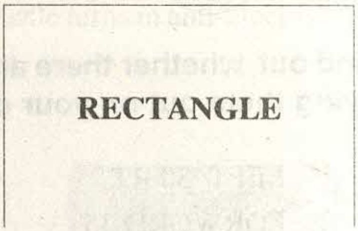
```
?FD 30 RT 90
?FD 30
?HOME
```

You will notice that as soon as we type the primitive HOME the turtle returns to the centre of the screen and a line is automatically drawn from its last position to its home position.

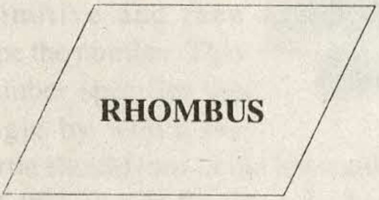
6.12 Let us learn to draw some basic shapes through LOGO



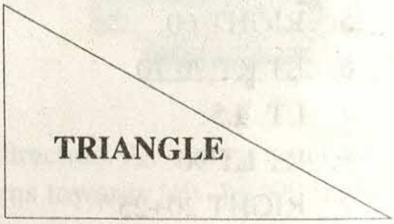
```
FD 40 RT 90 FD 40 RT 90
FD 40 RT 90 FD 40 RT 90
```



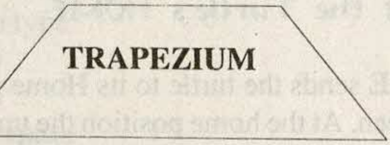
```
FD 40 RT 90 FD 60 RT 90
FD 40 RT 90 FD 60 RT 90
```



```
RT 45 FD 30  RT 45  FD 40
RT 45 FD 30 RT 135 FD
```



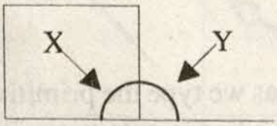
```
FD 30 RT 135 FD 50
RT 45 FD 40 HT
```



```
RT 45 FD 30 RT 45 FD 60 RT 135
FD 30 RT 45 FD 60 HT
```

You know that a square has four angles. These angles are called INTERIOR ANGLES. If you draw a straight line beside that angle you will get another angle which is called the EXTERIOR ANGLE. In case of a square, the interior and the exterior angles measure the same. i.e. 90°

X= interior angle = 90°
Y= exterior angle = 90°



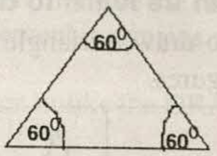
Triangle

A triangle is a closed three-sided figure which has three sides and three angles. There are three types of triangles.

……………………▶

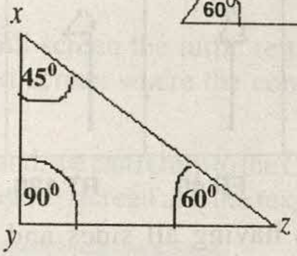
a. The three angles and three sides are equal

angle x= 60
angle y= 60
angle z= 60
Sum of 3 angles = 180°



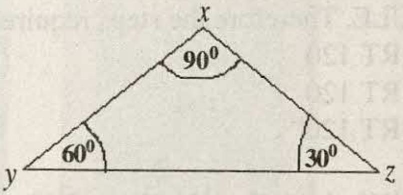
b. Two sides and two angles are equal

angle x= 45
angle y= 90
angle z= 45
Sum of 3 angles = 180°

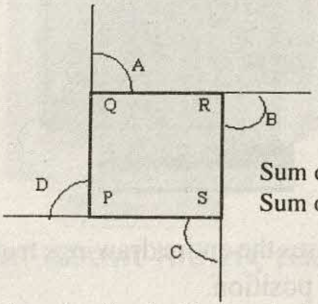


c.None of the sides are equal.

angle x= 90
angle y= 60
angle z= 30
Sum of 3 angles = 180°



From the above we can conclude that the sum of interior angles of any triangle=180°. We know that the small hand of a clock has to travel 360°, to complete one whole circular turn. In case of drawing a circle also the turtle has to travel 360 degrees. Again the sum of four interior angles of a square or a rectangle is 360 degrees, considering four angles each of 90 degree. Whereas in a triangle the sum of all interior angles is 180 but sum of all external angles is 360 degrees.

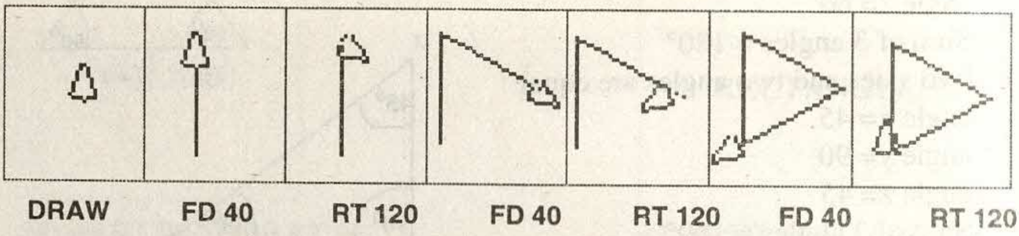


Sum of external angles = A + B + C +D = 360 degrees
Sum of internal angles = P+Q+R+S = 360 degrees

Thus , in a triangle, the turtle has to travel 360° to complete one full triangle. In the given example , we will consider a triangle having all sides and angles equal. Since all the angles are equal, the turtle will make all 3 turns equal. The turn of the turtle will actually depend on the exterior angle. Say if each exterior angle is 360/3 = 120 degrees the turtle has to turn by 120 degree so as to get a triangle having internal angle of 60°.

Let us learn to draw a Triangle through LOGO.

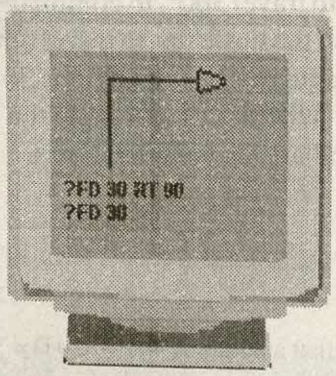
To draw a triangle of 40 turtle steps we give these command as given in the figures.



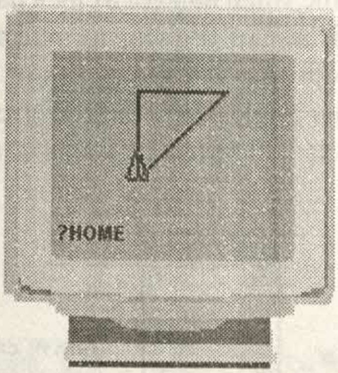
Triangles having all sides and angles equal are called EQUILATERAL TRIANGLE. Therefore the steps required are:

```
?FD  40 RT 120
?FD  40 RT 120
?FD  40 RT 120
```

6.13 How about clearing the graphics area by using the primitive CLEAR SCREEN



```
?FD 30 RT 90
?FD 30
```



```
?HOME
```

The command CLEARSCREEN or CS erases the entire drawings from the graphics area and sends the turtle to its HOME position.

However, the primitive CS does not erase the contents of the Text area. Let us try to understand the difference between the primitive DRAW and the primitive CS.

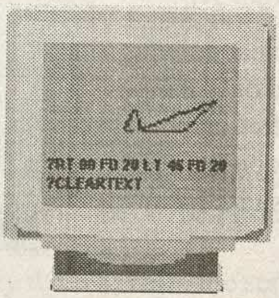
Whenever we type DRAW the turtle comes back at the centre of the screen with its face upwards and returns to Pen Down position even if it was in a Pen Up position earlier.

Whereas, in case you are in Pen Up position and type the CS primitive the turtle comes back to the center of the screen but for further movement it remains still in the earlier Pen Up position .

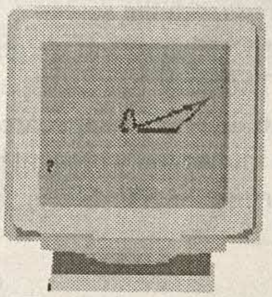
Thus, if the turtle's pen is up when the CS command is given unlike the DRAW it cannot put down the pen.

Again if the CS command is given in the full screen the turtle remains in the FULLSCREEN and one cannot see the Text screen where the commands are displayed

Whereas as soon as we give the DRAW command, we can return to the GRAPHICS SCREEN where we can view both the the graphics screen and the text screen.



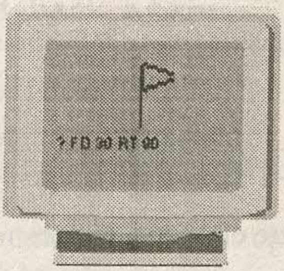
```
?RT 90 FD 20 LT 45 FD 20
?CLEARTEXT
```



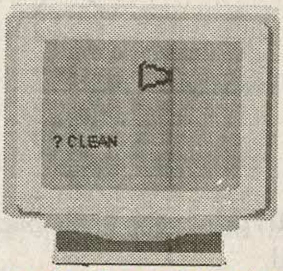
```
?
```

6.14 Let us clean the screen with the primitive CLEAN

The primitive CLEAN erases all the figures from the Graphics Screen but the turtle still remains on the screen with its head in its last position.



```
? FD 30 RT 90
```



```
? CLEAN
```

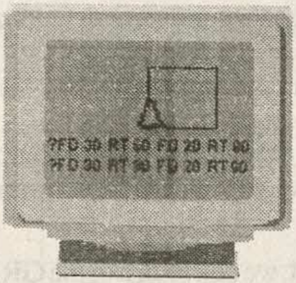
6.15 What about hiding the turtle and showing the Turtle again

You must have noticed that whenever you draw a figure the turtle remains visible. This may hamper the visual effect of a drawing. We can make use of the primitive HT that is used to hide the turtle from the screen. HT is the short form of HIDETURTLE. So remember, the primitive HIDE TURTLE makes the turtle disappear from the screen..

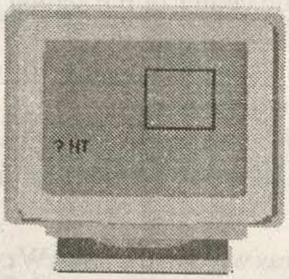
One interesting thing is that the turtle can still draw even if it is not visible.

………………….➜

Let us understand the command through the help of an example:

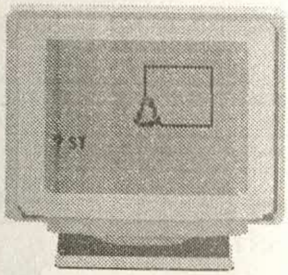


```
?FD 30 RT 90 FD 20 RT 90
?FD 30 RT 90 FD 20 RT 90
```



```
? HT
```

You must have noticed that as soon as we typed HT the turtle disappeared from the screen As seen on the given figure and we got a neat drawing: Don't' worry!! The turtle has disappeared only temporarily. The turtle that had disappeared after using HT primitive can be immediately brought back on the screen by using the primitive **ST**. **ST** is the short form of SHOW TURTLE.



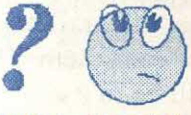
```
? ST
```

Let us revise the concept of HT and ST:
By using **HT** (HIDETURTLE) we can make the turtle disappear.
Now if we type the primitive **ST** (SHOW TURTLE)the turtle reappears on the screen.

Keep in mind:

- ☺ HOME brings the turtle back to the centre of screen, with its nose facing upward.
- ☺ ClearScreen/CS is used to rub off graphics from Graphic Area.
- ☺ ClearText/CT is used to erase text from Text Area.
- ☺ Clean primitive is used to clear the drawing from the graphics area of the screen keeping the turtle in its position.
- ☺ HideTurtle/HT is used to make the turtle disappear from the screen.
- ☺ ShowTurtle/ST is used to bring back turtle on the screen.

……………………▶



Brainstorming

I. Fill in the blanks with the correct option:

1. ___________ primitive clears the screen but the turtle remains at its last position.(Clear/Clean/CS)

2.We can clear text area by using ____________ primitive. (Text Clear/TA/CLEARTEXT)

3. _________ is the short form of Show Turtle.(TS/ST/SHOW)

4.When we use _______primitive the text area as well as graphic will be cleared.

5. After writing LOGO primitive we have to press _________. (Esc/Tab/Enter)

ii.Write 'True'or 'Flalse'.

1.Backward is a LOGO command.

2.FD means to move ahead.

3.We just write LT to turn the turtle left by 90^0.

4.HM primitive brings back the turtle home.

5.CS clears the text area.

6.CT erases only the text from the screen.

7.Turtle draws only in graphic area.

8.CS command erases the screen and bring back the turtle at centre.

6.16 What about taking away the pen from the turtle and giving it back again

Have you noticed the two sentences below:

1 .*Ilovemycountry.*

2. *I love my country.*

In sentence 1 the writer has forgotten to put up the pen and written a line continuously.

In sentence 2 the writer has put up its pen in appropriate places and inserted gaps to make the sentence correct.

Just the way you can pick up your pen to insert blank spaces by picking up your pen and resume writing

by putting down your pen the logo software can do the same with certain primitives available, which we will learn now.

You have seen the turtle drawing continuous lines in each of the figures it draws. The turtle is also capable

of drawing discontinuous lines with the help of its primitive PU command. PU is the short form of Pen Up command.

....................➤

We assume that the turtle carries with it a pen in its back and while it moves the pen draws along its direction of movement.If you imagine a set of parallel lines you will observe you have to draw two lines but with a gap between them. Thus you will understand that while drawing the lines the turtle will be in its **pendown** position whereas while creating the gap it has to be in its **penup** position.

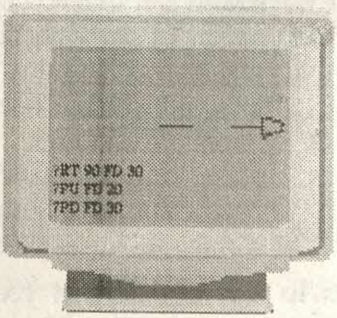
Thus while the turtle moves, it takes the help of PU command to avoid drawing on the screen whereas it

takes the help of PD command to draw along the direction of its movement.Thus the primitive PU is used

in those figures where we want the turtle to move around the screen, without drawing any figures.

Let us see the easiest of an example where we can use both PU and PD commands.

```
? RT 90  FD 30
? PU FD 20
? PD FD 30
```



```
?RT 90 FD 30
?PU FD 20
?PD FD 30
```

Let us understand the example step by step.

Step I: The Turtle turns to its right by 90 degree and moves forward by 30 steps.

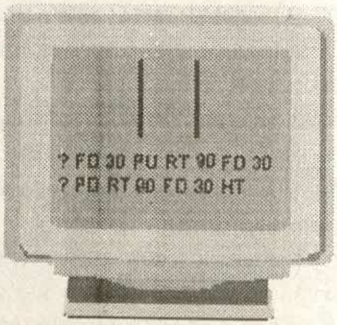
Step II: It then puts its penup and moves 20 steps in its pen up position. Thus no line is drawn along the turtle's movement.

Step III: It comes back to its pendown position and moves forward by 30 steps.

Remember unless the user specifies otherwise, the turtle always remains in the PenDown position

You can thus draw a set of parallel lines through PU and PD command by using the given primitives:

```
? FD 30 PU RT 90 FD 30
? PD RT 90 FD 30 HT
```



```
? FD 30 PU RT 90 FD 30
? PD RT 90 FD 30 HT
```

Let us summarise

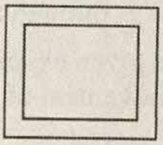
The primitive used for telling the turtle, to pick its pen up is **PENUP**

The short form of **PENUP** is **PU**. To use **PENUP** primitive, just type PEN UP or PU at question mark. After this command the turtle will move but will not draw.

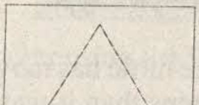
The primitive used to tell the turtle to put its pen down and draw again is called "**PEN DOWN"** primitive. The short form of **PEN DOWN** primitive is **PD.**

Let us do some examples using the primitives PU and PD

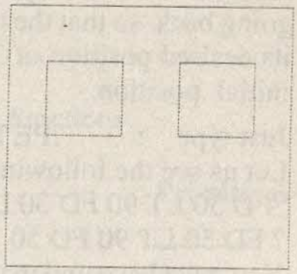
```
? FD 20 RT 90 FD 20 RT 90  FD  20
? RT 90 FD 20  PU FD 10 LT 90 FD 10
? LT 90 FD 40 LT 90 FD 40 LT 90
? FD 40 LT 90 FD 40
```



```
? RT 60 FD 40 RT 60 FD 40 HOME
? PU FD 60 RT 90 FD 60 RT 90 FD 80 RT 90
? FD 80 RT 90 FD 80 RT 90 FD 20
```

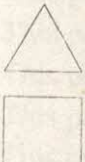


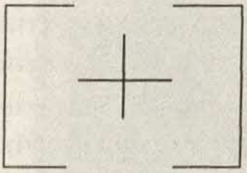
```
? FD 80 RT 90 FD 80 RT 90 FD 80 RT  90
?  FD 80 RT 90
? FD  40 RT 90 PU FD 10 PD FD 20 LT 90
? FD  20 LT 90 FD 20 LT 90 FD 20 LT 90    FD 20  PU FD 20
PD FD  20 LT 90 FD 20 LT 90LT 90 FD 20 LT 90
```

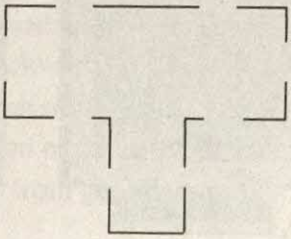


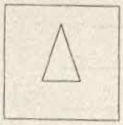
Brainstorming

What about drawing the given figures on your computer?









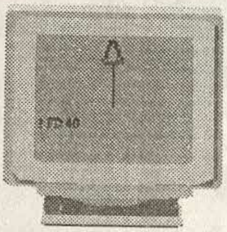
6.18 What about erasing figures using PE

While drawing a figure in your drawing book there is every chance you might make a mistake or want to make an alteration. What do you do to correct the mistake? You rub the mistake using an eraser and write it again. We assume LOGO turtle also has an eraser. Using its eraser, it can rub off the mistake. The primitive used to erase the line is called PEN ERASE primitive. The short form of **PEN ERASE** is **PE.**

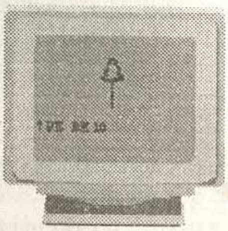
Let us assume that while trying to draw a line of 30 turtle steps, you inadvertently mention 40 steps and thus the turtle carries out your order obediently. Instead of rewriting the whole primitive all over again we can most of the times correct our mistakes through a primitive PE which acts like an eraser of real life.

Let us follow the given example to understand the same.
Say, the actual movement of the turtle required by you is
? FD 30
Say, by mistake you type:
? FD 40

That means the turtle has moved further by 10 more steps than it was supposed to; to correct our error we have to ask the turtle to erase its path by 10 steps by going back so that the turtle finally is at its desired position of 30 steps from its initial position.



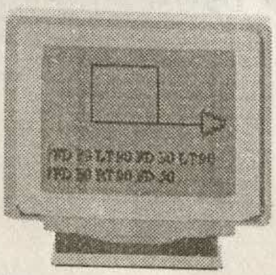
```
?FD 40
```



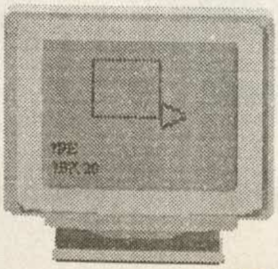
```
?PE BK 10
```

Just type : ?PE BK 10
Let us see the following example:
?FD 30 LT 90 FD 30 LT 90
? FD 30 LT 90 FD 50

You must have understood that in order to draw a square all the sides has to be of the same length. Thus instead of FD 50 we were supposed to type FD 30.With the help of the primitive PE we have moved back the turtle to the appropriate position.



```
?FD 30 LT 90 FD 30 LT 90
```



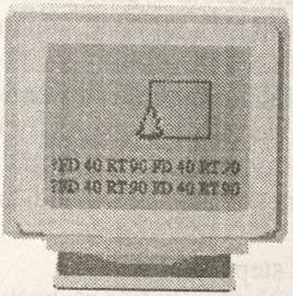
```
?PE
?BK 20
```

..................►

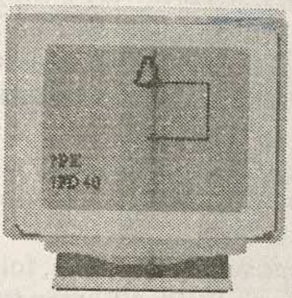
Let us see another example:

In the given figure say we draw a four-sided figure and later we feel we want to erase the last side .The same can be obtained with the following primitives:

```
? FD 40 RT 90 FD 40 RT 90
? FD 40 RT 90 FD 40 RT 90
? PE FD 40
```



```
?FD 40 RT 90 FD 40 RT 90
?FD 40 RT 90 FD 40 RT 90
```



```
?PE
?FD 40
```

Always remember to use the PD command after using the PE command

Brainstorming

A. Write the LOGO primitives matching with their functions.

Functions	Primitives
1. This primitive hides the turtle from screen.	______
2. This primitive erases text and pictures from screen.	______
3. This primitive brings back the turtle to its home position	______
4. This primitive cleans the text or primitives in Text area	______
5. This primitive brings back the turtle on screen.	______
6. This primitive moves the turtle ahead	______
7. This primitive moves the turtle backward	______
8. This primitive changes the direction of the turtle anti-clockwise.	______
9. This primitive changes the direction of the turtle clockwise.	______
10. This primitive cleans the graphic from graphic area.	______

6.19 Learning to Repeat

Say you have to add 5+5+5+5+5+5+5+5+5+5 i.e. we have to add the number 5 for ten times.

What do you do ?

Repeat 10 times 5 i.e 10 * 5 = 50

It becomes so easy to understand and work . Similarly, you will find very often we have to use the same primitives to draw a single figure, which is not only time taking but also very boring. To reduce our typing time, LOGO offers us with a primitive called REPEAT followed by a number, which is used to depict the number of times, we want to repeat a set of primitives. You may recall that the four sides of a square being identical if we can repeat four times the primitive required to draw one side of a square, we will automatically be able to draw a square Wow! It's really easy and time saving method of drawing a figure.

The primitive REPEAT is used, whenever any command has to be repeated more than once.

To use the repeat primitive, follow the steps below

Step I: Type REPEAT at the LOGO prompt.

Step II: Press SPACE BAR

Type the number, which specifics the number of times the primitives have to be repeated.

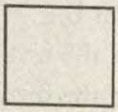
Type the primitive to be repeated within square brackets. []

Let us draw a square having 30 turtle steps using the primitive repeat.

```
? REPEAT   4[FD 30  RT  90]
```

Space Square Bracket

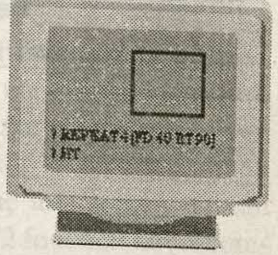
4 denotes the number of time the primitives within the square bracket has to be repeated. Using repeat primitive, same figure can be drawn in an easy way and lesser time.

Drawing a square without using REPEAT	Drawing a square using REPEAT
? FD 30 RT 90 ? FD 30 RT 90 ? FD 30 RT 90 ? FD 30 RT 90 	? REPEAT 4 [FD 30 RT 90]

Let us draw certain basic figure using the primitive REPEAT

For Example :

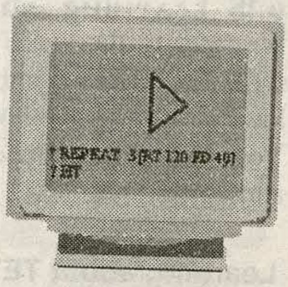
Let us draw a square with the primitive REPEAT



```
? REPEAT 4 [FD 40 RT 90]
? HT
```

```
? REPEAT 4 [FD 40 RT 90]
? HT
```

Let us draw a triangle with the primitive REPEAT



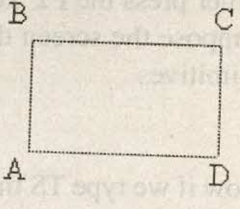
```
? REPEAT 3[RT 120 FD 40]
? HT
```

```
? REPEAT 3[RT 120 FD 40]
?HT
```

Let us draw a rectangle with the primitive REPEAT

```
? REPEAT 2[FD 40 RT 90 FD 60 RT 90]
? HT
```

In the above example we have used the primitive "**Repeat**" two times primarily because we initially draw two adjacent unequal sides which are then repeated to obtain the rectangle.



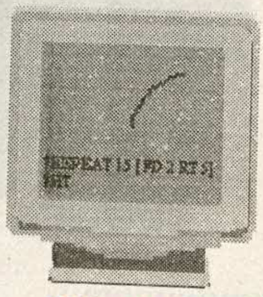
We can explain it in the following way.

First draw the side AB and BC, then repeat the same to obtain CD and DA

6.17 Learning to draw curved lines through REPEAT

You can draw curved lines with the help of the primitive REPEAT.

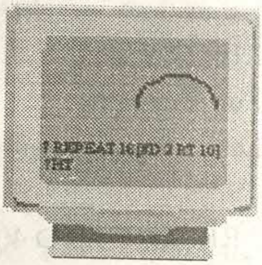
```
?REPEAT 15[FD 2 RT 5]
? HT
```



```
?REPEAT 15 [FD 2 RT 5]
?HT
```

Let us draw a semi circle.

```
? REPEAT 18[FD 2 RT 10]
? HT
```



```
? REPEAT 18[FD 2 RT 10]
?HT
```

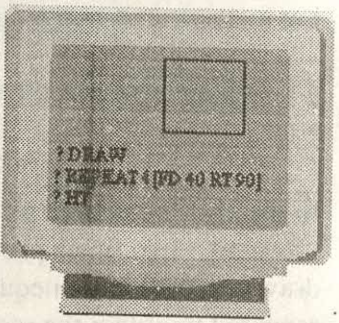
6.18 Learning about different LOGO screens

We refer to the turtle's drawing screen as the graphics screen. The graphics screen is divided into 25 lines. The upper 20 lines are for graphics area and lower 5 lines at the bottom of the screen are meant for typing the commands. You will find that different areas are allotted on the screen for drawing figures and writing primitives or data respectively.

Learning about TEXTSCREEN

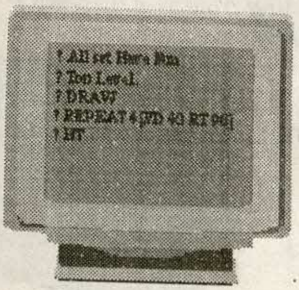
The command TEXTSCREEN or TS sets the entire screen to text. It displays all the commands that we have typed since starting LOGO. We can see the text screen by typing the command TS or by pressing the F3 key. To return to the graphics screen we can either press the F2 key or type SS.

Suppose the screen displays both the figure and the primitives



```
? DRAW
? REPEAT 4[FD 40 RT 90]
? HT
```

Now if we type TS the screen will only display the primitives and the figure will disappear.

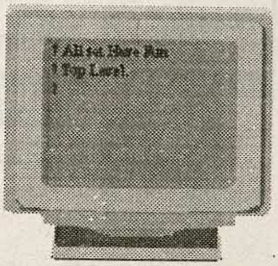


```
? All set [illegible]
? Top Level.
? DRAW
? REPEAT 4[FD 40 RT 90]
? HT
```

Understanding the Graphics screen or Splitscreen

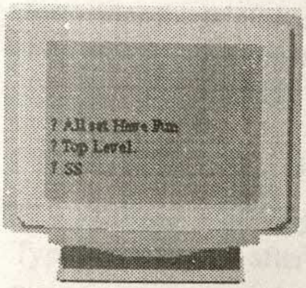
The graphics screen of logo is also referred to as the SPLITSCREEN .The short form of the primitive SPLITSCREEN is SS. Since both the graphics area and the text area are visible at the same time we refer to it as the splitscreen. When we type more than 5 lines in the text area , the lines on the top scroll upward and thus disappear. To return to the graphics screen from the text screen we can either type in the command SS or Splitscreen or press the F2 function key. Moreover the command DRAW sets you into the graphics screen.

Suppose the screen is looking like the following:



```
? All set Have Fun
? Top Level.
?
```

Now if you type SS the screen will look like the following:

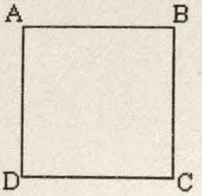


```
? All set Have Fun
? Top Level.
? SS
```

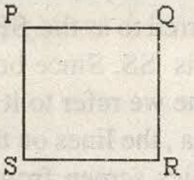
Brainstorming

Draw the figures using REPEAT command

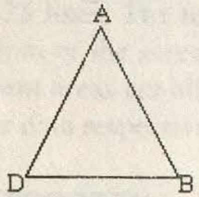
1.Draw a square ABCD where each of the side is 40 turtle steps



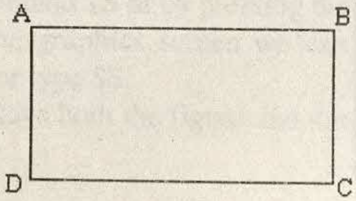
2.Draw a square PQRS where each of the sides is 30 turtle steps



3. Draw a triangle ABC where each of the sides is 60 turtle steps



4. Draw a rectangle ABCD where AB and CD are 80 turtle steps each and AD and BC are 40 turtle steps.



CHAPTER 7
Learning to print through LOGO

We will learn about

- **Introduction**
- **Printing words through LOGO**
- **Printing the first item only**
- **Printing all items other than the first one**
- **Printing the last item only**
- **Printing all items except the last one**
- **Counting the datasize using the primitive PR COUNT**
- **Learning to print specific item of data**

7.1 INTRODUCTION

You have read different uses of LOGO in previous chapters. One of them is printing text on LOGO screen through the primitive PRINT or PR .

Rules for writing the primitive depend on whether we want to print a number, a word or a set of words and numbers. I am sure you have understood that PR is the short form of the primitive PRINT.

7.2 Printing words through LOGO

In order to display a word through LOGO we have to follow the given steps:

- Type PRINT or PR after logo prompt ? which is displayed on the monitor.
- Press space bar
- Type quotation marks (“) at the beginning of the word you want to print
- Type the word you want to be printed on the screen.
- Press the **Enter** Key to get the output.

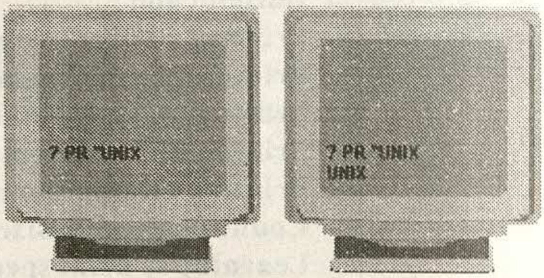
```
?PR “ UNIX

UNIX
```

7.3 Printing more than one word through LOGO:

- Type PRINT or PR at the logo prompt (?)
- Press spacebar
- Type the desired sentence **within brackets [ ]** as shown in the example.
- Press Enter Key to get the output.

```
? PRINT [GOOD MORNING].
or
? PR [GOOD MORNING]
GOOD MORNING
```



```
? PR "UNIX
```

```
? PR "UNIX
UNIX
```

To print a number follow the given steps

- Type PRINT or PR
- Press spacebar and type the number you would like to print on the monitor
- Press Enter key to see the result.

```
? PR 567123
567123
```

In case you want to print more than one number say 3 numbers you have to enclose them within brackets. ? PR [22 33 44]

```
22 33 44
```

7.4 Printing the first item only

PR FIRST: This primitive is used to print the first character of a word or a numeric data. In case of several words or numbers PR FIRST prints the first word or the first number only.

Let us see some examples:

a.
```
? PR FIRST "SUBHASHISH
S
```

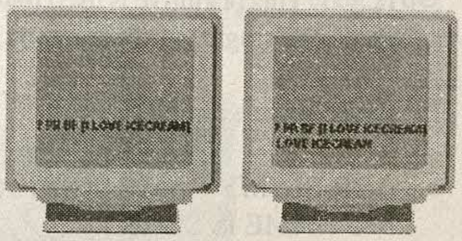
b. ? PR FIRST [I LOVE ICECREAM]
I

c. ? PR FIRST "25364968
2

d. ? PR FIRST [22 44 66 88]
22

7.5 Printing all items other than first one

BUTFIRST: This primitive is used to print all the characters of a word or numeric data except the first one. The short from of BUTFIRST is BF.



```
? PR BF [I LOVE ICECREAM]
```

```
? PR BF [I LOVE ICECREAM]
LOVE ICECREAM
```

Let us see some examples:

a. ?PR BF "SUBHASHISH"
UBHASHISH

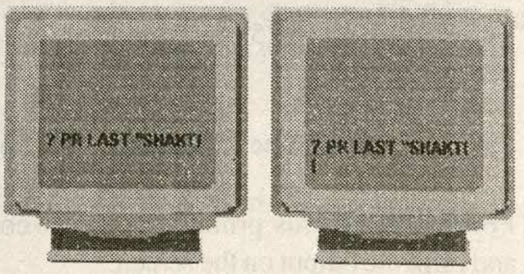
b. ?PR BF [I LOVE ICECREAM]
LOVE ICECREAM

a. ? PR BF "16253649
6253649

d. ? PR BF [16 19 22 25]
19 22 25

7.6 Printing the last item only

PR LAST: This primitive is used to print the last character of the data entered. In case of a single word or a number it prints the last character of the word or the number but in case of a list of several words numbers , it prints the last word or the last number.



```
? PR LAST "SHAKTI
```

```
? PR LAST "SHAKTI
I
```

Let us see some examples:

a.? PR LAST "SHAKTI
I

```
b. ? PR LAST [ICECREAM COKE CHOCOLATE]
   CHOCOLATE
c. ? PR LAST [12345]
    5
d. ? PR  LAST [16 19 22 25 ]
    25
```

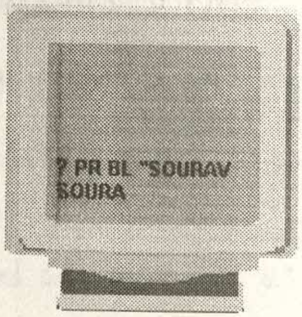
7.7 Printing all items except the last one

BUTLAST: This primitive is used to print all the characters of a numeric data , a set of words,or a single word except the last one. The short form of BUTLAST is BL.

Let us see some examples

```
a. ? PR BL [MY NAME IS SHAKTI  SHANKAR]
   MY NAME IS SHAKT
b. ? PR BL "SOURAV
   SOURA
```

```
? PR BL "SOURAV
```



```
? PR BL "SOURAV
SOURA
```

```
c. ? PR BL 123456
   12345
d. ? PR BL [16 25 36]
   16 25
```

7.8 Counting the datasize through PR COUNT

PRINT COUNT: This primitive is used to count the number of characters in a data and print the output on the screen.

To use this primitive follow the given steps:

- Type PR COUNT at LOGO prompt (?)
- Press space bar
- Type the data , which is to be counted and printed on the screen.

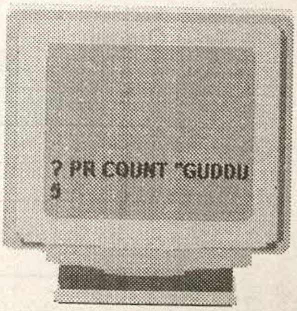
(Type inverted comma (") at the beginning of a single word/number you want to print. In case of a list of words/numbers type them within brackets as shown in the example).

Let us see some examples:

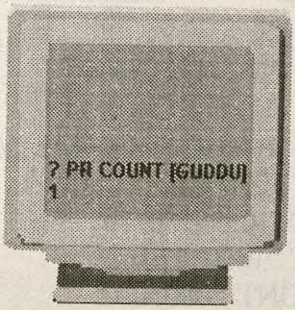
a.
```
? PR COUNT "GUDDU
5
```

The output is 5 because the word GUDDU comprises of 5 letters

b.
```
? PR COUNT [GUDDU]
1
```



```
? PR COUNT "GUDDU
5
```



```
? PR COUNT [GUDDU]
1
```

The output is 1 because the word GUDDU is within brackets and the computer considers

it as a single word.

c.
```
? PR COUNT [G U D D U]
5
```

The output is 5. Due to the presence of space between the characters in the word "G U D D U" the computer treats them as a group of five words.

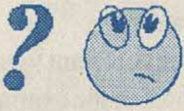
d.
```
? PR COUNT [RAVI DIPAK ANINDA SHANKAR]
4
```

(The list RAVI DIPAK ANINDA SHANKAR has 4 words. To count words we give

space between the words)

e.
```
? PRINT COUNT 11123
5
```

f.
```
? PRINT COUNT "11123
1
```



(The output is 5 because 11123 has 5 digits. You will notice that in case of counting a single number the use of inverted comma is optional).

Brain storming:

Give the output

Output

a. PR COUNT [VICTORIA] ____________
b. PR COUNT [V I C T O R I A] ____________
a. PR COUNT [BASIC PROGRAMMING] ____________
b. PR COUNT 10305070 ____________
c. PR COUNT [10 30 50 70] ____________
d. PR COUNT "10305070 ____________
g. PRINT COUNT "000ABC ____________

7.9 Learning to print specific item of a data

This primitive is used to display a particular number or word.

- ☺ Type PR at logo prompt.(?)
- ☺ Press spacebar and type the data, which can be either a word or a number
- ☺ Press spacebar and type the item number that you want to display within open quotes or brackets as applicable.
- ☺ Press Enter key to get the output.

Let us see some examples:

a.
```
? PR ITEM 3"987650
7
```

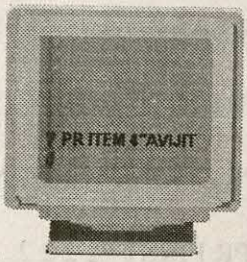
(The result is 7, because the third item has been picked up from 987650).

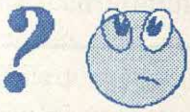
b. ? PR ITEM 3 [98 76 50]
50

(The result is 50, because of the presence of space, the computer considers the numbers
as three items and thus prints the last item which is 50)

c. ? PR ITEM 4"AVIJIT
J

(The fourth item is J in the word AVIJIT)





Brainstorming

1. Give the output:

a. PR ITEM 3 "16253649
b. PR ITEM 3 [16 25 36 49]
c. PR ITEM 4 "ACES
d. PR ITEM 1[LOGO TURTLE MOVING AHEAD]
e. PRINT ITEM 3"SNOOPY

2. Write down the Corrected form:

Incorrect	Correct
a. PR FIRST 123456	**PR FIRST "123456**
b. PR FST "LAPTOP	

c. PRINT FIRST FLOPPY CD PEN ____________________

d. PR BF [JACK AND JILL] ____________________

e. PR LAST "687543" ____________________

f. PR LAST "68 75 43 9] ____________________

g. PR BL "[HAVE A GOOD DAY]" ____________________

h. PR COUNT [LEARNING TO COUNT ____________________

i. PR FIRST "2 2 2 2 ____________________

j. PR LST [MERA BHARAT MAHAN ____________________

k. PR ITEM 6[MY TEACHER IS VERY CARING] ____________________

3. What about some fun with names:

a. Print your name without the last letter
b. Print your friends name without the last letter
c. Print the number of items your first name has
d. Print the third item of your first name.

CHAPTER 8
Doing Calculations through LOGO

We will learn about

- **Introduction**
- **Doing Addition, Substraction, Multiplication and Division in LOGO**
- **Learning to compare through LOGO**

8.1 Introduction

Logo can do arithmetic just the way we do. It can add, subtract, multiply and divide numbers.

While doing calculations in LOGO the same Arithmetic operators are used which we have learnt in our Maths class.

i. +	is used for ADDITION	144+12= 156
ii -	is used for SUBTRACTION	144-12=132
iii *	is used for MULTIPLICATION	144*12=1728
iv. /	is used for DIVISION	144/12=12

You must have noticed that instead of "x" symbol "*"(asterisk)sign is used as a symbol of multiplication to avoid confusion arising out of the letter "x" of the alphabet.

8.2 Addition

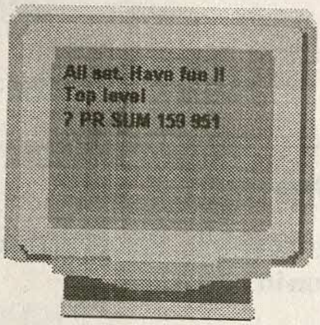
The Primitive SUM or the symbol "+" is used to add two or more numbers.

To add two numbers say 159 and 951

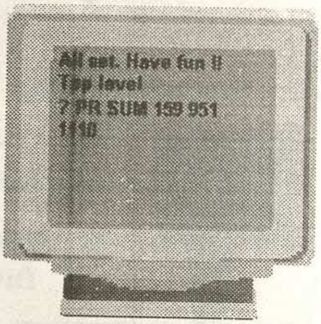
```
? PR SUM 159 951
1110
```

OR

```
? PR 159 + 951
1110
```



```
All set. Have fun !!
Top level
? PR SUM 159 951
```



```
All set. Have fun !!
Top level
? PR SUM 159 951
1110
```

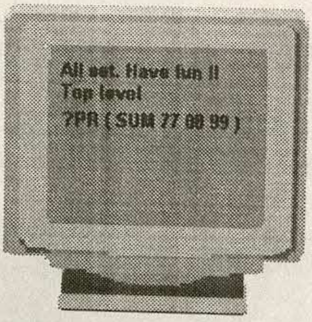
If you input more than two numbers and want to carry out a calculation without using a symbol but using the primitives then a parentheses should be used as shown in the example

Let us add three numbers

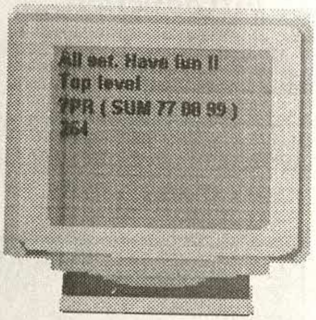
```
? PR (SUM 77 88 99)
264
```

OR

```
? PR 77 +88 +99
264
```



```
All set. Have fun !!
Top level
?PR ( SUM 77 88 99 )
```



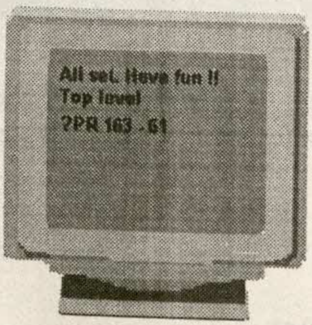
```
All set. Have fun !!
Top level
?PR ( SUM 77 88 99 )
264
```

8.3 Subtract

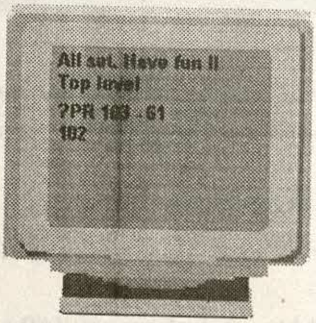
We can also carry out subtraction by using "-" symbol as in our regular Maths classes. Let us see some examples.

```
? PR 163 – 61
102
```

```
? PR 177 – 17 –99
61
```



```
All set. Have fun !!
Top level
?PR 163 - 61
```



```
All set. Have fun !!
Top level
?PR 163 - 61
102
```

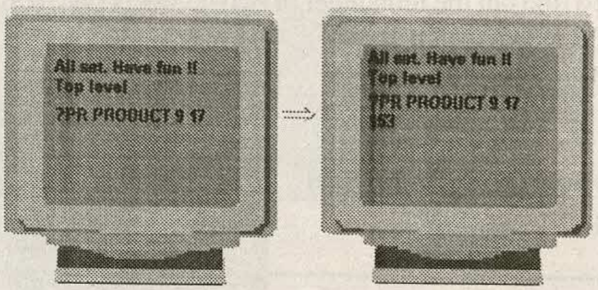
8.4 Multiply or Product

The Primitive PRODUCT or the symbol " * " (ASTERISK) is used to find the product of two or more numbers. Let us see some examples.

```
? PR 9 * 17
```

Or

```
? PR PRODUCT 9  17
153
```



```
All set. Have fun !!
Top level
?PR PRODUCT 9 17
```

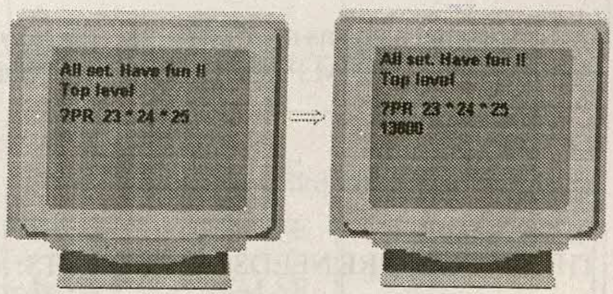
```
All set. Have fun !!
Top level
?PR PRODUCT 9 17
153
```

To multiply any three numbers say 23, 24 and 25

```
? PR (PRODUCT 23 24 25)
13800
```

OR

```
? PR 23  * 24  * 25
13800
```



```
All set. Have fun !!
Top level
?PR 23 * 24 * 25
```

```
All set. Have fun !!
Top level
?PR 23 * 24 * 25
13800
```

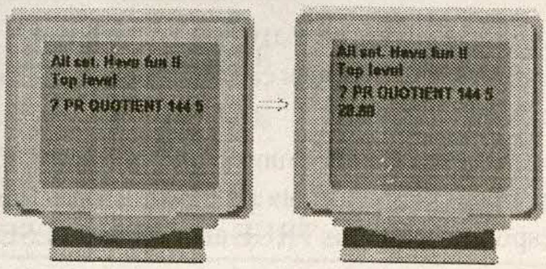
8.5 DIVISION

To divide one number by anoth Primitive **QUOTIENT** or the symbols "/" is used. Remember the second number should not be zero. LOGO prints the result with two places after decimal.

Let us divide 144 by 5

```
? PR QUOTIENT 144 5
28.80
```

```
? PR 144/5
28.80
```



```
All set. Have fun !!
Top level
? PR QUOTIENT 144 5
```

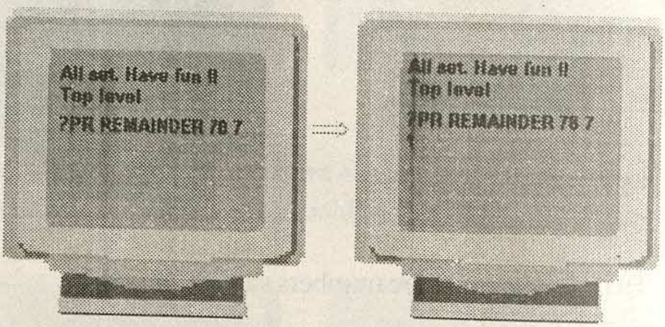
```
All set. Have fun !!
Top level
? PR QUOTIENT 144 5
28.80
```

The primitive REMAINDER prints the remainder obtained from dividing one number (divisor) by another (divisor).

To find out the remainder of two numbers say 36, 6

```
PR REMAINDER 36 6
0
```

```
?PR REMAINDER 78 7
1
```



```
All set. Have fun !!
Top level
?PR REMAINDER 78 7
```

```
All set. Have fun !!
Top level
?PR REMAINDER 78 7
1
```

Let us see what happens if we do not mention any operator in the Print statement. Operators may be SUM,PRODUCT, REMAINDER etc.

```
? PR 82  49
```

LOGO will display the following message.

```
THIS PROCEDURE NEEDS MORE INPUTS: >
```

In all the above examples we found that we have to necessarily mention the type of operator in words or symbol But incase if we forget to put any operator we get an error message.

8.6 Learning to compare through Logo

Just the way a computer can calculate it can also compare data. Data can be numbers or texts.

Let us see an example to understand the method of comparing and reaching a conclusion. Such comparisons of data are known as logical operations. You will notice our computer responds to YES as TRUE and NO as FALSE.

Symbols used for comparing data

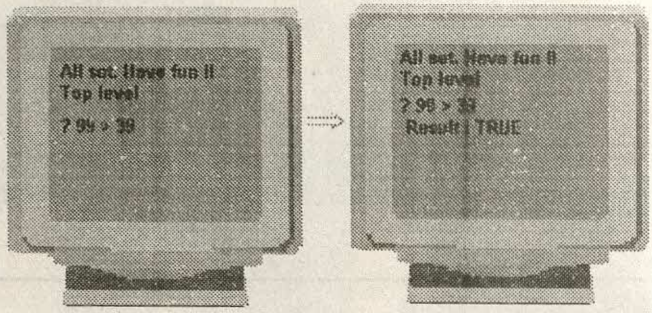
Function	Symbol
Greater Than :	>
Less Than :	<
Equal To :	=

Data	Analysis	Result
TOM is 9 years of age JERRY is 10 years old	Is 9>10 FALSE Is 9<10 TRUE Is 9 = 10 FALSE	TOM is younger to JERRY
TOM has 5 Chocolates TOM has 5 Chocolates	Is 5>3 TRUE Is 5<3 FALSE Is 5 = 3 FALSE	TOM has more chocolates than JERRY
TOM has 3 pencils JERRY has 3 pencils	Is 3>3 FALSE Is 3<3 FALSE Is 3 = 3 TRUE	TOM has the same number of pencils JERRY has

Logo can compare bigger numbers.
We can compare two numbers say 99, 39

?99 > 39

RESULT: TRUE

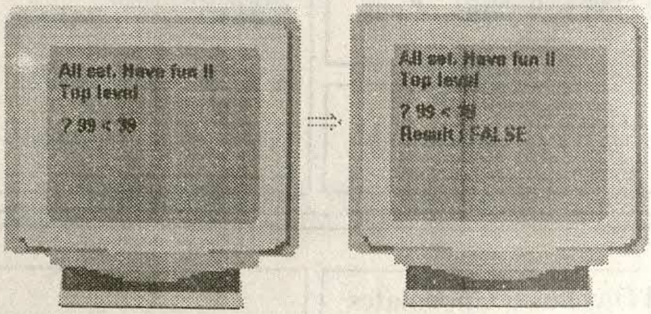


```
All set. Have fun !!
Top level
? 99 > 39
```

```
All set. Have fun !!
Top level
? 99 > 39
Result : TRUE
```

? 99 < 39

RESULT: FALSE



```
All set. Have fun !!
Top level
? 99 < 39
```

```
All set. Have fun !!
Top level
? 99 < 39
Result : FALSE
```

Brainstorming

1. **Write down the Primitive and the output of the following:**

i. To add 347 to 94

____

ii. To add 45 and 56 and 100

____

iii. To add 28 and 46

iv. To get result of 12 + 45 + 78

____

v. To get result of 100 – 34 – 45

____

vi. To find product of 12 and 23

____

vii. To find the quotient of 63 and 7.

____

viii. To find the remainder of 182 and 23

____

2. Write whether the following statements are CORRECT or INCORRECT

i. PR SUM 34 56 ________________________

ii. PR SUB 56 89 ________________________

iii. PR 699 +89 ________________________

iv. (PR SUM 45 90) ________________________

CHAPTER 9

Flowchart

We will learn about

- **Introduction.**
- **Different shapes used in flowchart.**
- **Buying a Railway Ticket for going on a Holiday.**
- **Preparing lemonade.**
- **Making a phone call.**
- **Drinking cold water from fridge.**
- **Packing your Bag for school.**
- **Boarding a bus.**
- **Posting a letter.**
- **Getting an Ice cream.**
- **Should you go to school today?**
- **Buying a Pen.**
- **Writing an Examination.**

9.1 Introduction

A flow chart as the name suggests may be explained as a chart depicting the sequence to carry out a specific job in the form of instructions. By seeing a flowchart we can understand the process or the logic involved in order to do a job. For example if we have to go to a school we have to do the following jobs:

- Get up from bed.
- Take a bath
- Wear your school uniform
- Pack your bag
- Catch the school bus
- Reach School

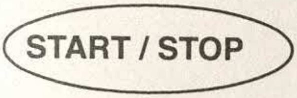
Thus the above steps are to be followed for reaching school.

In Computer Science, this logic has to be depicted through a picture to make things understandable. Flow charts comprise of several boxes, which depict different jobs.

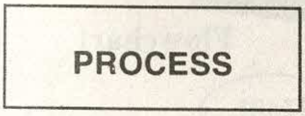
……→

9.2 Different shpaes used in Flowchart

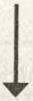
A flowchart is a pictorial representation of a step by step solution to a problem. Various shapes are used in a Flowchart to depict different kinds of operations carried out inside a computer.



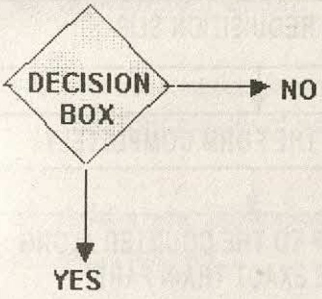
An OVAL symbol is used as START or STOP box.



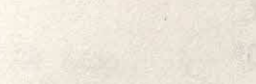
A rectangular box denotes a PROCESS box.
This box is used to declare the different works to be performed.



An ARROW points to the next step to be followed.

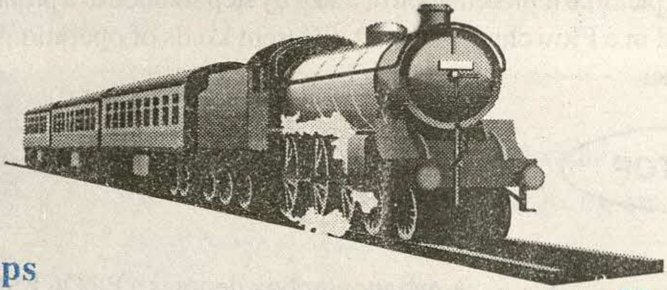


The DECISION BOX is a rhombus which looks like a diamond shaped box. It is used to show all the statements where the decision of true or false is taken by the computer. The decision box has two control lines showing the action to be taken for each decision.



The INPUT or OUTPUT BOX has the shape of a Parallelogram.
It is used to show all the input and the output data.

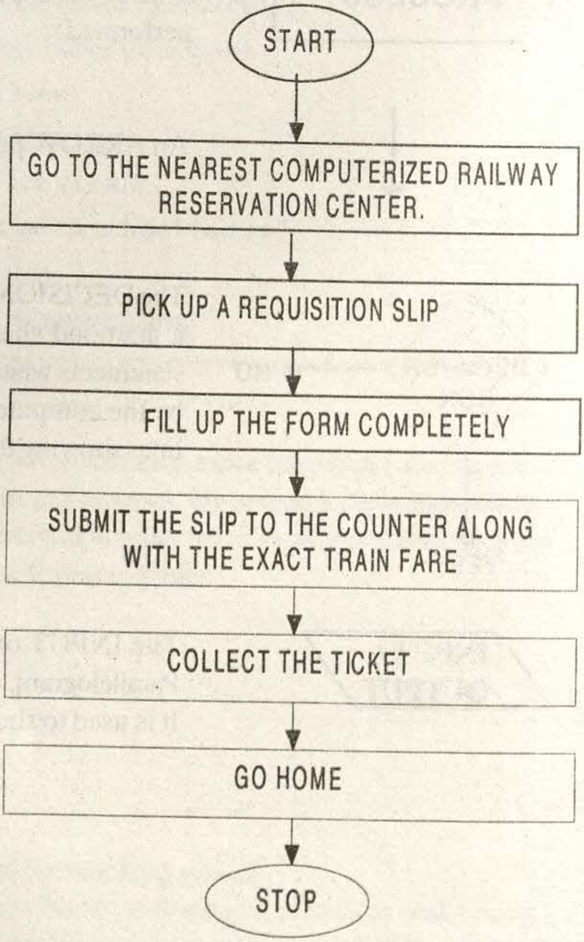
9.2 Buying a Railway Ticket for going on a Holiday



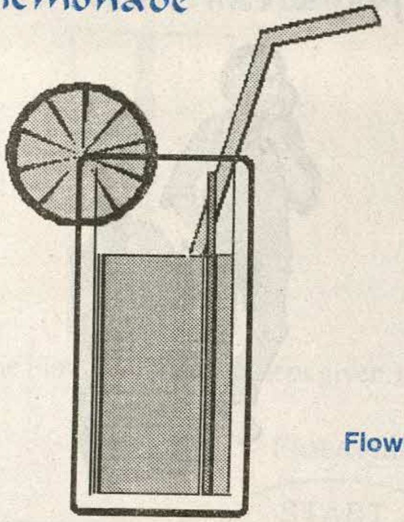
Steps

- Start
- Go to the nearest computerized Railway Reservation center.
- Pick up a Requisition Slip.
- Fill up the form completely.
- Submit the slip to the counter along with the exact Train Fare.
- Collect the ticket.
- Go Home.
- Stop

Flowchart


START
GO TO THE NEAREST COMPUTERIZED RAILWAY RESERVATION CENTER.
PICK UP A REQUISITION SLIP
FILL UP THE FORM COMPLETELY
SUBMIT THE SLIP TO THE COUNTER ALONG WITH THE EXACT TRAIN FARE
COLLECT THE TICKET
GO HOME
STOP

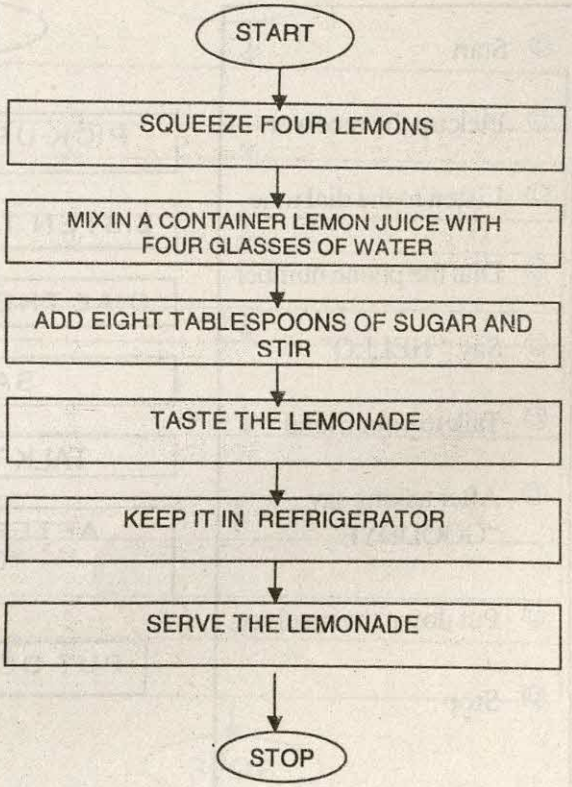
9.4 Preparing lemonade



Steps

- Start
- Squeeze four lemons
- Mix in a container lemon juice with four glasses of water
- Add eight tablespoons of sugar and stir
- Taste the lemonade
- Keep it in a refrigerator
- Serve the lemonade
- Stop

Flowchart

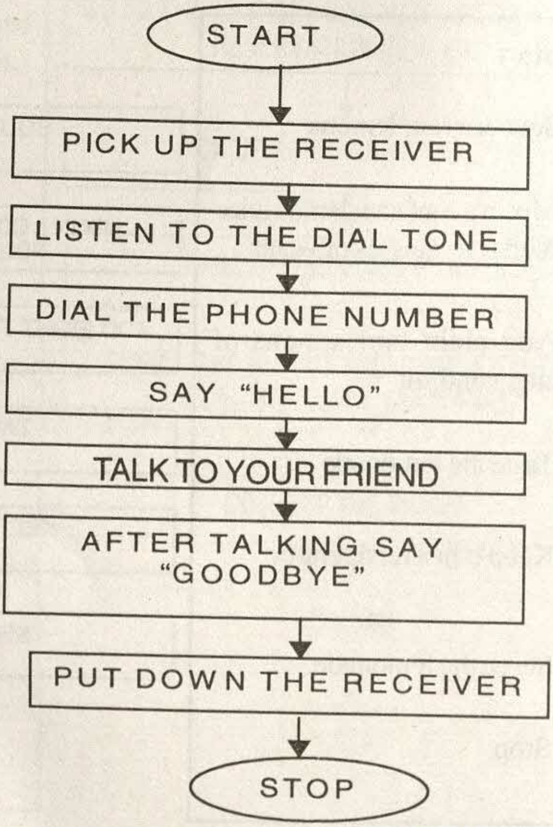

START
SQUEEZE FOUR LEMONS
MIX IN A CONTAINER LEMON JUICE WITH FOUR GLASSES OF WATER
ADD EIGHT TABLESPOONS OF SUGAR AND STIR
TASTE THE LEMONADE
KEEP IT IN REFRIGERATOR
SERVE THE LEMONADE
STOP

9.5 Making a phone call

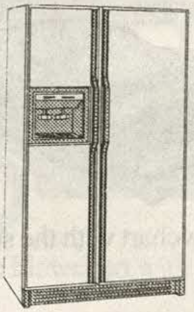
Steps

- ☺ Start
- ☺ Pick up the receiver
- ☺ Listen to the dial tone
- ☺ Dial the phone number
- ☺ Say " HELLO"
- ☺ Talk to your friend
- ☺ After talking say "GOODBYE"
- ☺ Put down the receiver
- ☺ Stop

Flowchart



9.6 Drinking cold water from fridge

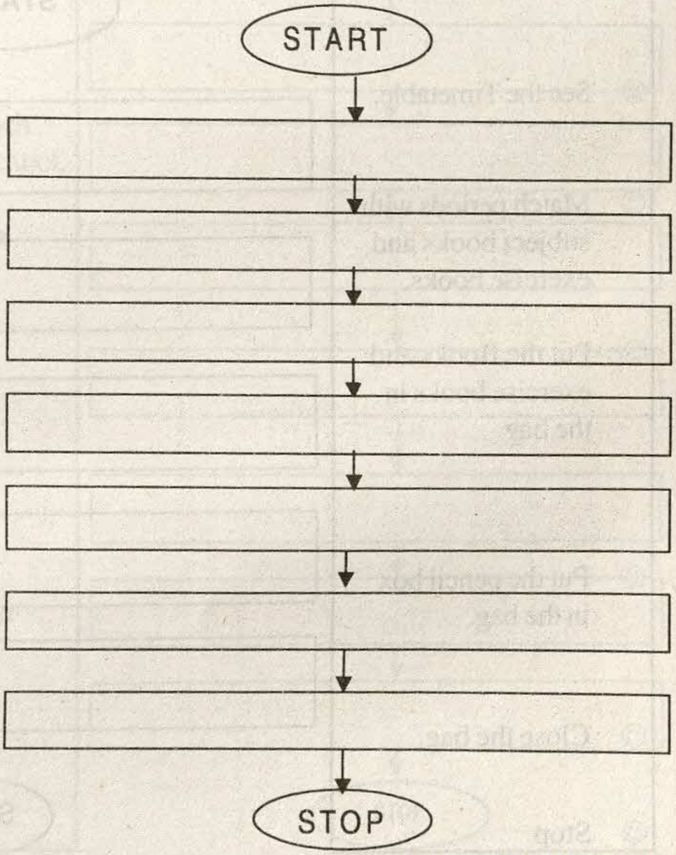


(Fill up the Flowchart with the steps given.)

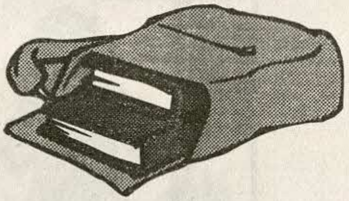
Steps

- ☺ Start
- ☺ Open the door of the fridge.
- ☺ Take out the bottle.
- ☺ Take a glass.
- ☺ Pour water in the glass.
- ☺ Drink water.
- ☺ Keep the bottle inside.
- ☺ Close the door.
- ☺ Stop

Flowchart



9.7 Packing your Bag for school

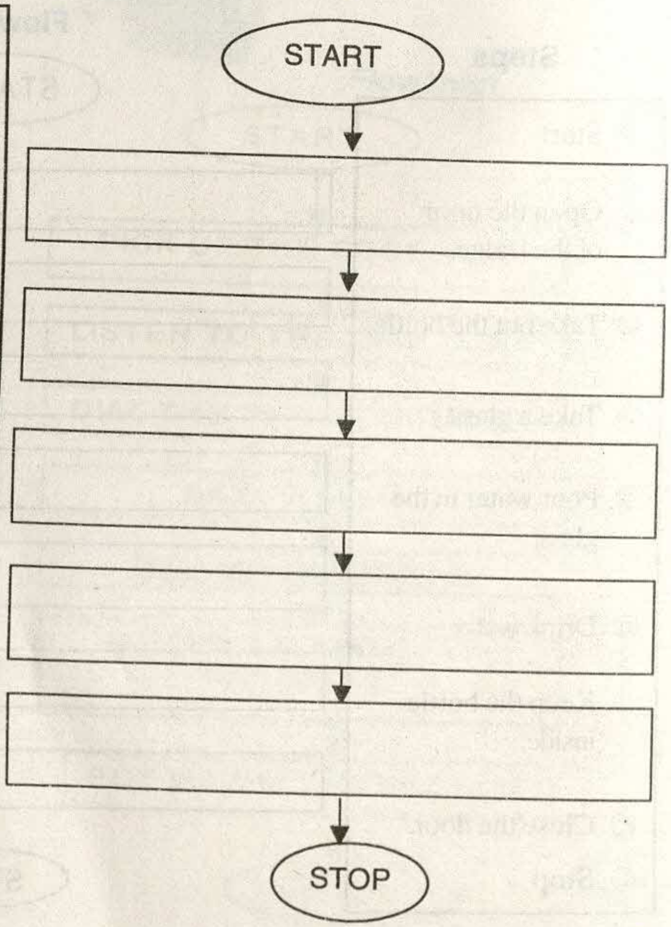


(Fill up the Flowchart with the steps given.)

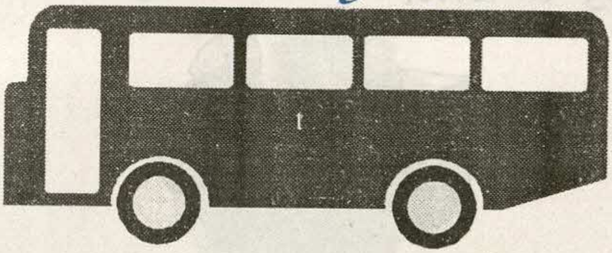
Steps

- ☺ Start
- ☺ See the Timetable.
- ☺ Match periods with subject books and exercise books.
- ☺ Put the Books and exercise books in the bag.
- ☺ Put the pencil box in the bag.
- ☺ Close the bag.
- ☺ Stop

Flowchart



9.8 Boarding a bus

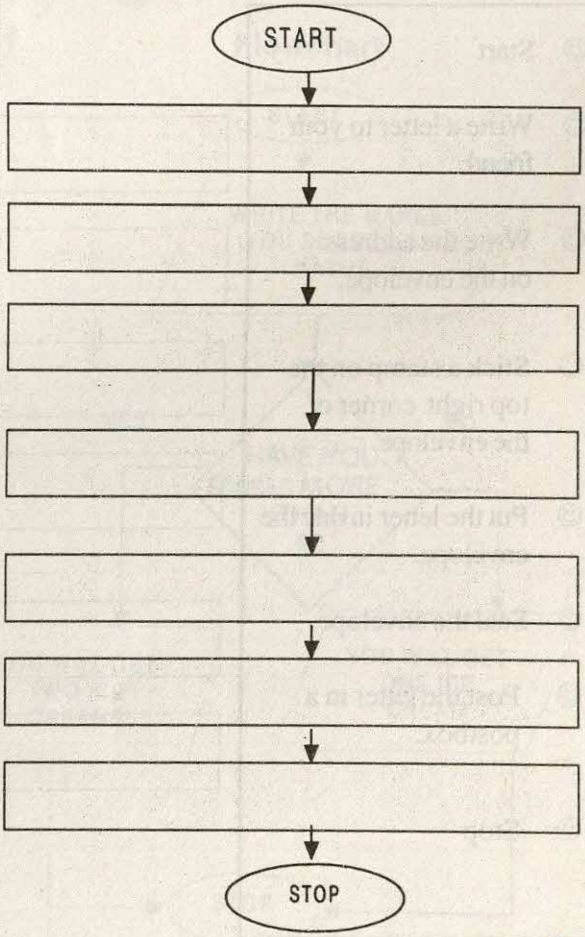


(Fill up the Flowchart with the steps given.)

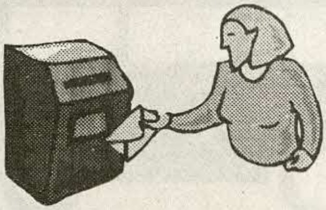
Steps

- Start
- Stand at the bus stop
- Wait for the bus by which you will reach you to school.
- Let the bus reach to the bus stop
- Board the bus after it has stopped.
- Pay your bus fare
- Collect your ticket.
- Get down at the desired location.
- Stop

Flowchart



9.9 Posting a letter

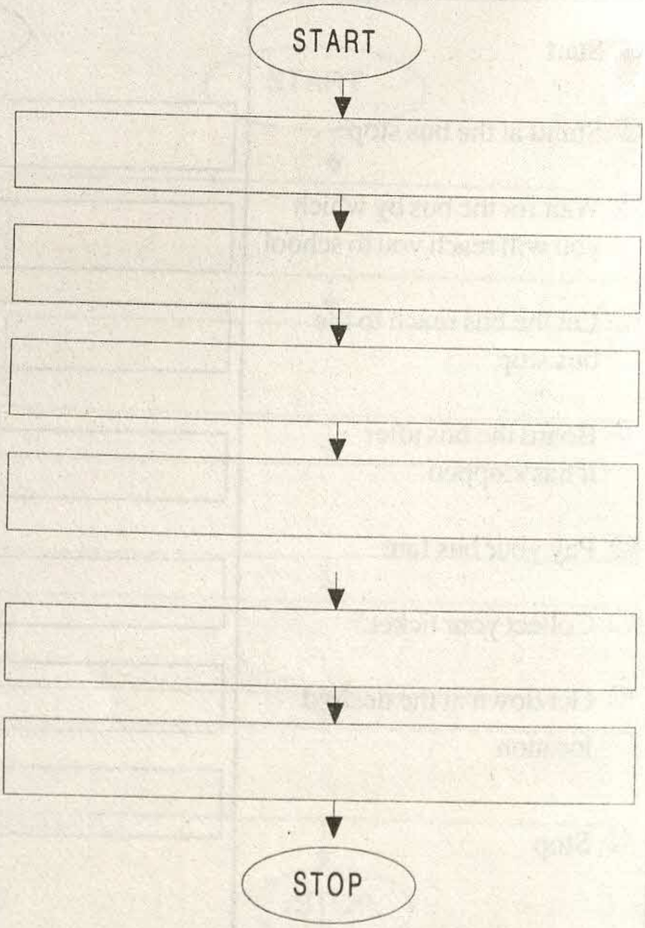


(Fill up the Flowchart with the steps given.)

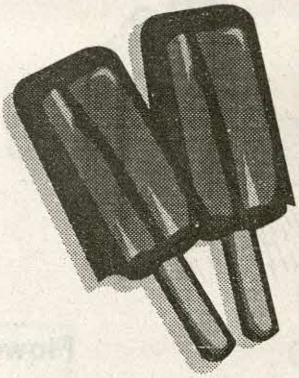
Steps

- Start
- Write a letter to your friend.
- Write the address on the envelope.
- Stick a stamp on the top right corner of the envelope.
- Put the letter inside the envelope.
- Seal the envelope.
- Post the letter in a postbox.
- Stop

Flowchart



9.10 You can get an Ice cream



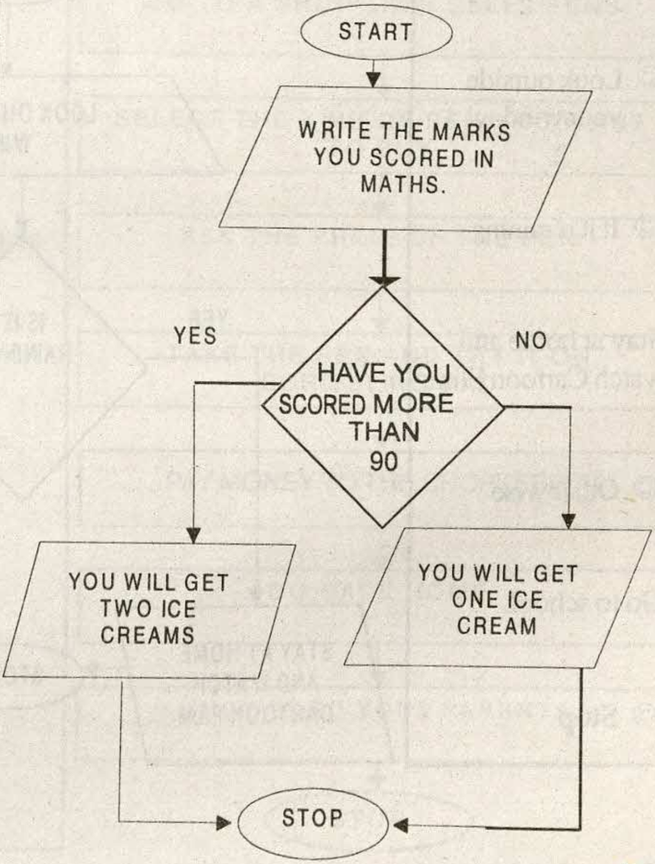
Steps

- Start
- Type the marks you scored in Maths

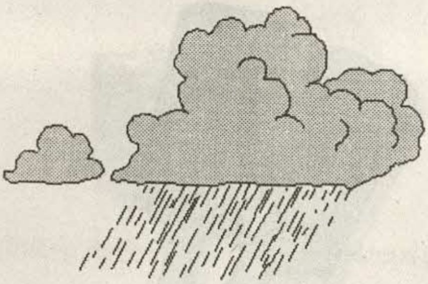
If you have scored more than 90

- Then you will get two ice creams
- Otherwise you get only one ice cream.
- Stop

Flowchart


START
WRITE THE MARKS YOU SCORED IN MATHS.
YES
NO
HAVE YOU SCORED MORE THAN 90
YOU WILL GET TWO ICE CREAMS
YOU WILL GET ONE ICE CREAM
STOP

9.11 Should you go to school today?



Steps

☺ Start

☺ Look outside your window

☺ If it is raining

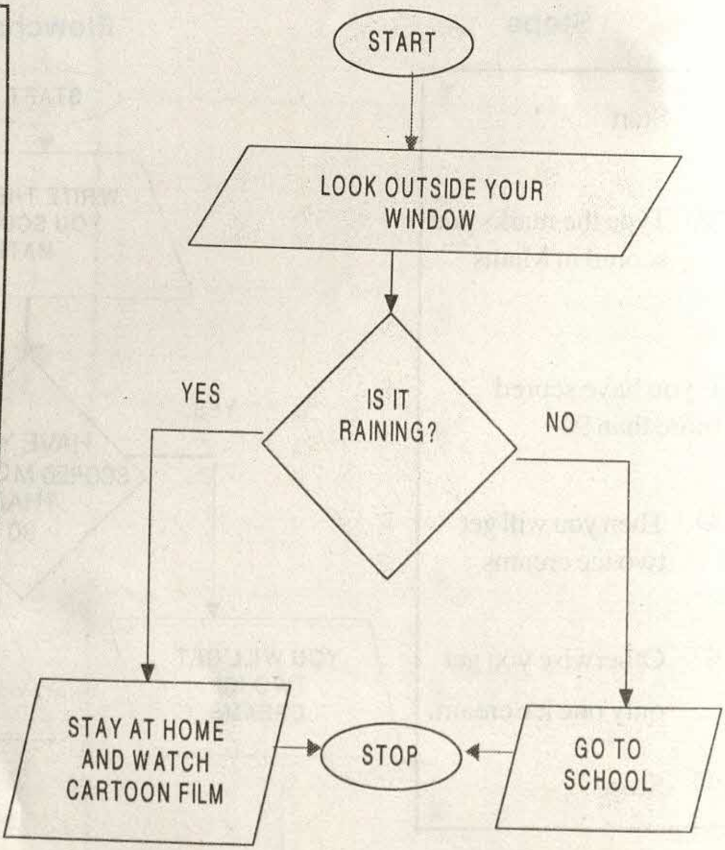
Stay at home and watch Cartoon Flim.

☺ Other wise

Go to school.

☺ Stop

Flowchart

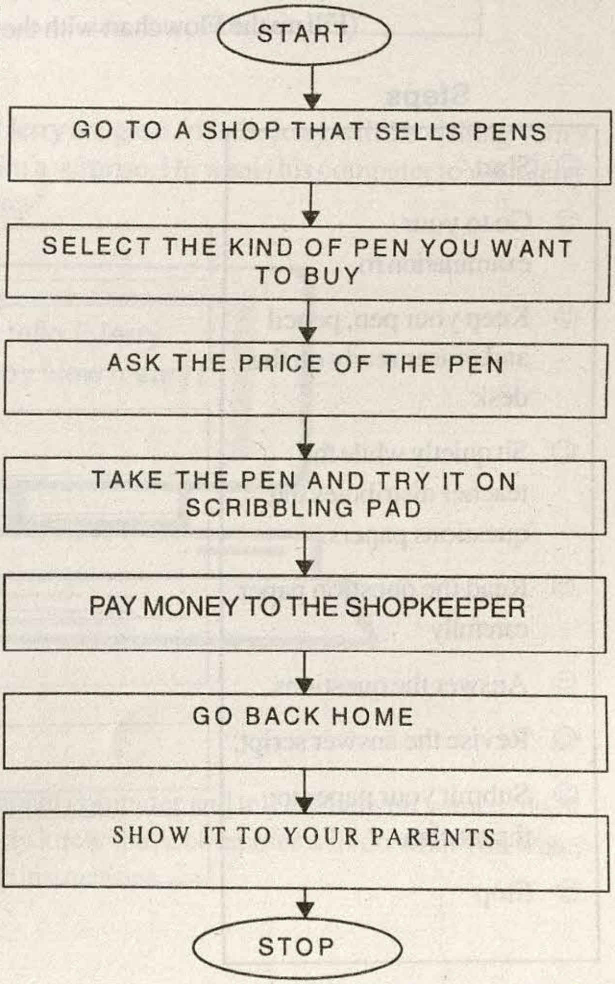


9.12 Buying a Pen

Steps

- ☺ Start
- ☺ Go to a shop that sells pens
- ☺ Select the kind of pen you want to buy
- ☺ Ask the price of the pen
- ☺ Take the pen and try it on a scribbling pad
- ☺ Pay the money to the shopkeeper.
- ☺ Go back to your home.
- ☺ Show it to your parents.
- ☺ Stop

Flowchart


START
GO TO A SHOP THAT SELLS PENS
SELECT THE KIND OF PEN YOU WANT TO BUY
ASK THE PRICE OF THE PEN
TAKE THE PEN AND TRY IT ON SCRIBBLING PAD
PAY MONEY TO THE SHOPKEEPER
GO BACK HOME
SHOW IT TO YOUR PARENTS
STOP

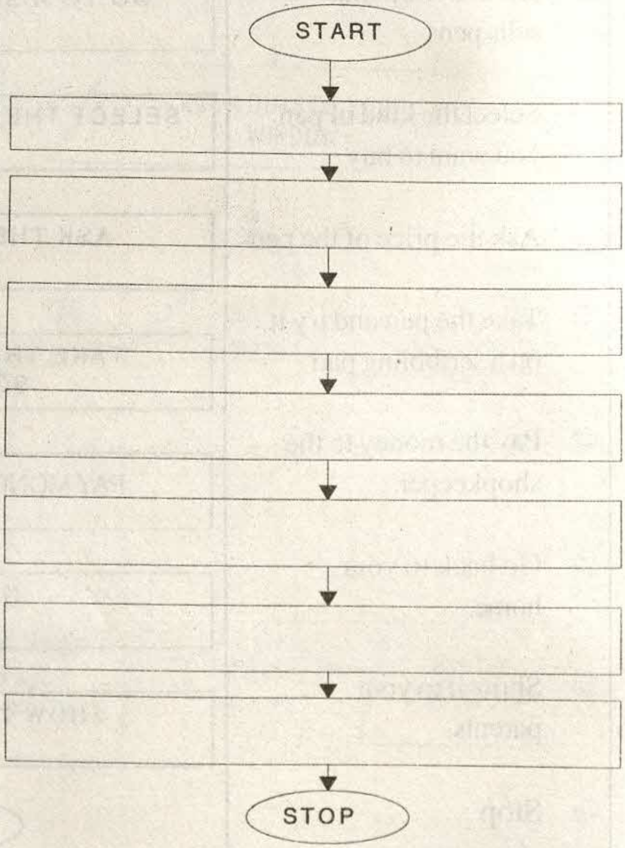
9.13 Writing an Examination

(Fill up the Flowchart with the steps given.)

Steps

- Start
- Go to your examination ro
- Keep your pen, pencil and eraser ready on the desk
- Sit quietly while the teacher distributes the questions papers.
- Read the question paper carefully
- Answer the questions.
- Revise the answer script.
- Submit your paper to the teacher
- Stop

Flowchart



CHAPTER 10
Let us learn BASIC Programming

We will learn about

- ☺ **Introduction.**
- ☺ **Learning to know about BASIC Statements.**
- ☺ **Learning about the command LIST.**
- ☺ **Erasing a line of a program.**
- ☺ **Generating line numbers automatically.**
- ☺ **Learning to print.**

10.1 Introduction

Today is New Year's day. Tom and Jerry are great friends. Jerry will be visiting Tom's house today. Tom wants to give him a surprise. He wants his computer to wish Jerry a "HAPPY NEW YEAR!!" greeting.

But you can't just speak to the personal computer and tell it what you want to do. It will just not understand . You already know that a computer will do what you want, only if you give it exact, step by step instructions.

A step by step list of instructions for the computer to follow is called a **Program**. Programs have to be written in a language your computer can understand.
There are different computer languages, which you will learn, gradually in your higher classes. BASIC is a very simple computer language, which you will be able to follow very easily. The full form of BASIC is Beginners All Purpose Symbolic Instruction Code.

Here is a program written in BASIC language, to wish Jerry a HAPPY NEW YEAR. Follow it carefully line by line.

```
NEW
10 PRINT  “ HELLO! JERRY “
20 PRINT  “HAPPY NEW YEAR!!”
30 END
```

10.2 BASIC Statements

All BASIC programs are made up of statements .
These statements tell the computer what to do.
Every statement in BASIC program essentially starts with a line number. In the above example 10,20,30 etc. are known as line numbers.

The computer follows the line numbers to do things in specific order .It goes to the lowest line number first. Then it goes to the higher line number, and so on. Even if you mix the numbers up, the computer will still follow them in the correct order that is, it will execute from the lowest number and then subsequently reach the highest number.

Every statement in BASIC program begins with special command word.

NEW: NEW is a command word in BASIC. NEW is always placed at the beginning of a new program and doesn’t need a line number. NEW instructs the command to erase all previous programs and informs the computer that the user is typing a new program.

PRINT: This is another command word in BASIC. It tells the computer to print everything between the quotation marks. While working with numbers PRINT statement acts as a calculator.

END: This statement tells the computer that the program is complete. This statement is the last statement of the BASIC program.

LIST: LIST is used to display a program on the screen after it has been typed by the user.

A program is fed into a computer by typing it through the help of a keyboard. At the end of each statement you press the Enter key so as to ensure that the processor actually processes the instructions.

Ask your teacher to load BASIC software in your computer.

SYSTEM: If you want to come out of BASIC you have to type the word SYSTEM and then press ENTER key.

After every statement you have to press the Enter key (↵) to ensure that the data goes inside the processor for necessary processing. Enter key is also known as the Return key.

Let us see a complete BASIC program

```
NEW
10 PRINT "HELLO! JERRY"
20 PRINT "HAPPY NEW YEAR!!"
30 END
RUN
```

After typing the entire program you should check how it works. Type the word RUN and press the ENTER key as shown above. You will find the output as given.

```
HELLO! JERRY
HAPPY NEW YEAR!!
Ok
```

10.3 Learning about the command word: List

You can bring in changes in your program whenever you like. First call back the program to the screen by typing the word **LIST** and press the **Enter** key. As soon as you type the word LIST the computer displays the last program typed by you.

```
LIST
10 PRINT "HELLO! JERRY"
20 PRINT "HAPPY NEW YEAR!!"
30 END
```

Let us try to insert a line in the above program. Say you want to insert a line “TOM WISHES YOU ”in between Line Number 10 and Line Number 20 so that the display looks like the following.

```
HELLO! JERRY
TOM WISHES YOU
HAPPY NEW YEAR!!
```

To add a new line “TOM WISHES YOU “ in between line no. 10 and line no. 20;we have to first type LIST and then press ENTER key so that we can view the entire program. You have to type the line you want to insert with a new line number through the computer keyboard at the end of the program:

```
LIST
10 PRINT  “HELLO! JERRY”
20 PRINT  “HAPPY NEW YEAR!!”
30 END
Ok
15 PRINT “ TOM WISHES YOU”      ←———      (New line to be inserted)
```

Now if you type LIST you will find that line number 15 has been automatically inserted in between line number 10 and line number 20.

```
LIST
10 PRINT “HELLO! JERRY”
15 PRINT “TOM WISHES YOU ”
20 PRINT “HAPPY NEW YEAR!!”
30 END.

Ok
RUN
HELLO! JERRY
TOM WISHES YOU
HAPPY NEW YEAR!!
```

The computer follows the line numbers in ascending order that is why it executed Line no.15 after line no.10 and before line no.20.

We can change line no. 15 again. Just type the line number again and type what you wish to type. Let us add two words “A VERY” at the end of the line number 15 so

··························►

that it reads “TOM WISHES YOU A VERY “. First type LIST and press enter key to call back the last program on the screen.

```
LIST
10 PRINT  “HELLO! JERRY”
15 PRINT “TOM WISHES YOU ”
20 PRINT “HAPPY NEW YEAR!!”
30 END
```

Now type:

```
15 PRINT “TOM WISHES YOU A VERY”
```

Now type LIST and press “Enter” key.

```
LIST
10 PRINT  “HELLO JERRY”
15 PRINT “TOM WISHES YOU A VERY ”
20 PRINT “HAPPY NEW YEAR!!”
30 END
```

Now type RUN and press ENTER key, see what comes on the screen:

```
RUN
HELLO! JERRY
TOM WISHES YOU A VERY
HAPPY NEW YEAR!!
```

10.4 What about erasing a line of a program

We can erase any line of a program by typing the line number and pressing the ENTER key. To erase the Line number 15 we have to type 15 and press the ENTER key.

```
15 (Enter)
```

Wow! Line no. 15 is no more there. If you press LIST you will not find Line number 15 in the program.

```
LIST
10 PRINT  “HELLO! JERRY”
20 PRINT “HAPPY NEW YEAR!!”
30 END
```

10.5 Learning to generate line numbers automatically

AUTO: Instead of typing 10, 20,30…and so on, we can type AUTO and press ENTER key so that line numbers are generated automatically. Thus the command word AUTO creates line numbers automatically

```
AUTO (ENTER)
10
20
30
40
```

To come out of line number loop we have to press Ctrl + C keys together.

```
AUTO
10
20
30 (pressing Ctrl key press C)
Ok
```

Command word comes at the beginning of the program and does not need any line number.

10.6 Learning to PRINT

PRINT: The statement PRINT tells the computer to print on the screen .

For example:

```
10 PRINT "HONESTY IS THE BEST POLICY "
20 END
```

Here, the statement PRINT will print whatever is written within the quotation marks (" ") i.e . HONESTY IS THE BEST POLICY

Suppose we type:

```
10 PRINT 99*9
20 END
RUN
891
Ok
```

…………………▶

Here the statement PRINT will multiply 99 with 9 and print the result i.e. 891. In this case the computer acts as a calculator.
You will find that the statement PRINT gives two different types of output depending upon the type of data used .

1. If the data is placed within quotation marks then the output is the same as the input and no mathematical or logical operation takes place on the data.
2. In case of numeric data which are **not enclosed** within quotes necessary mathematical or logical operation takes place on the data and the computer prints the desired results.

In the examples given below we will understand it easily.
Let us see some examples:
Example 1.

```
10 PRINT “WELCOME TO THE WORLD WIDE WEB”
20 PRINT “INTERNET IS THE GATEWAY TO THE WORLD
30 PRINT “INTERNET IS THE NETWORK OF NETWORKS“
40 END
```

```
WELCOME TO THE WORLD WIDE WEB
INTERNET IS THE GATEWAY TO THE WORLD
INTERNET IS THE NETWORK OF NETWORKS
```

Example 2.

```
10 PRINT “ 285/5=”
20 PRINT 285/5
30 END
Ok
RUN
285/5= ( Output of Line no.10)
57     ( Output of Line no.20)
Ok
```

In the above example line number 10 will be printed as **285/5=** but without the quotation marks (“ “). You will notice that in case a data is enclosed within quotation marks no arithmetic or other operation can take place and these data are printed in ditto in the output as given in the input.

Whereas in Line no. 20, the output of the arithmetic operation 285/5 will print the result which is 57. You will also find that the PRINT statement works as a calculator as it can perform arithmetic operation on numbers which are not enclosed within quotes. Let us follow another example carefully to understand the functions of PRINT statement.

Example 3.

```
10 PRINT "1+11+111+1111 = "
20 PRINT  1+11+111+1111
30 PRINT      ←                    PRINT statement without data
40 PRINT "5*55*555="
50 PRINT  5*55*555
60 PRINT      ←                    PRINT statement without data
70 PRINT  "99/9 ="
80 PRINT 99/9
90 END
OK
RUN

1+11+111+1111=
 1234
              ← Blank line
5*55*555=
 152625
              ← Blank line
99/9=
11
```

You must have noticed if **a PRINT statement is not followed by any data it displays a blank line** as shown in the above program.

Another important point worth mentioning is that if we insert space inside quotes the blank spaces are printed in the same style as has been inserted.

Let us see an example:

```
NEW                                 OUTPUT
10 PRINT "  *  *  *   "              *  *  *
20 PRINT "     *      "                 *
30 PRINT "  *  *  *   "              *  *  *
40 END
RUN
```

Brainstorming

1. Try out the programs on your computer and write the output below :

```
NEW
AUTO
10 PRINT "1234+4371="
20 PRINT 1234+4371
30 END
RUN
```

____

____

Ok

2.

```
NEW
AUTO
10 PRINT "439 * 20="
20 PRINT  439 * 20
30 END
```

____

____

Ok

3.

```
NEW
AUTO
10 PRINT "6789-987="
20 PRINT  6789-987
30 END
RUN
______________________________

______________________________
 Ok
```

4.

```
  NEW
  AUTO
 10 PRINT "455/5="
 20 PRINT  455/5
 30 END
 RUN
 ______________________________

 ______________________________
 Ok
```

Try the following exercises on your computer and find out the output:

Exercise 1:

```
 NEW
 10 PR INT "C"
 20 PRINT "O"
 30 PRINT "M"
 40 PRINT "P"
 50 PRINT "U"
 60 PRINT "T"
 70 PRINT "E"
 80 PRINT "R"
 90 END
```

..................►

Exercise 2 :

```
 NEW
 10 PRINT "MODEM
 20 PRINT "SPEAKER
 30 PRINT "SCANNER
 40 PRINT
 50 END
```

Exercise 3.

```
NEW
10 PRINT " 5  5  5
20 PRINT "    5  5
30 PRINT "       5
40 END
```

Exercise 4:

```
 NEW
 10 PRINT  "        *          "
 20 PRINT "    *         *    "
 30 PRINT " *               *"
 40 PRINT "    *         *    "
 50 PRINT "        *"
 60 RUN
 END
```

Exercise 5:

```
NEW
10 PRINT "####################"
20 PRINT "# #              # #"
30 PRINT "#   #          #    #"
40 PRINT "#      #    #      #"
50 PRINT "#        #         #"
60 PRINT "#      #    #       #"
70 PRINT "#   #          #   #"
80 PRINT "# #              # #"
90 PRINT "###################"
60 END
RUN
```

Exercise 6 :

Match the following

i. SYSTEM	a. A simple computer language.
ii. RUN	b. Indicates the end of a progra
iii. END	c. Generates line numbers automatically.
iv. LIST	d. To come out of BASIC
v. BASIC	e. To display a program
vi. AUTO	f. Executes a program

Exercise 7 :

Fill in the blanks:

(a) A step by step list of __________ which the computers follows in order is called a program.

(b) Each statement of a BASIC program starts with a __________.

(c) We have to press __________ key at the end of every statement,

(d) RUN displays the __________ on the screen.

Exercise 8 :

Answer the following question.

(a) What is full form of BASIC?

(b) Do you require a line number for the command word LIST?

(c) Give an example of a command word.

(d) What happens if PRINT statement is not followed by any data?

(e) Write a program to print your name, your father's name and your mother's name.

Exercise 9 :

Write a program in BASIC to get an output of the following:

(a) Print your name and your school name

(b) To add 4653 and 3265.

(c) To subtract 432 from 6485.

(d) To find the product of 423 and 21.

(e) To divide 4212 by 18.

Exercise 10 :

State True or False.

(a) BASIC stands for Beginners All Purpose Symbolic Institutional Code.

(b) RUN doesn't need line number.

(c) Line numbers shouldn't be repeated.

(d) We cannot do calculations with the help of PRINT statement.

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